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JULY 2008

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**UBUNTU
8.04**

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- eMule 0.48a
- Exploding Tech Omnibus
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- GSpot 2.70a
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- Java Runtime Environment 6 (Update 5) for Windows
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- Microsoft .NET Framework 2.0
- Microsoft .NET Framework 3.5
- Microsoft DAISY software
- Microsoft DirectX (March 2008)
- Mozilla Firefox 2.0.0.14 for Linux
- Mozilla Firefox 2.0.0.14 for Mac OS X
- Mozilla Firefox 2.0.0.14 for Windows
- PC Inspector Smart Recovery 4.5
- PeerGuardian 2.0 Beta6b
- Race Driver: GRID Demo
- Real Alternative 1.8
- Spybot - Search and Destroy 1.5.2.20
- Ubuntu 8.04 LTS Desktop Edition
- Ubuntu 8.04 LTS Server Edition
- Undelete Plus 2.94
- UnRARX 2.2
- VLC media player 0.8.6f for Mac OS X
- VLC media player 0.8.6f for Windows
- XviD 1.1.3
- ZipGenius 6.0.3

playable demo

RACE DRIVER: GRID



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This logo indicates a free, complete and unrestricted software package, available only on APC's cover DVD.

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editorial



TONY SARNO

Some may consider our cover headline this month to be a touch of hyperbole — saying Ubuntu is a better upgrade from XP than Vista. But for anybody who does not specifically need Office applications or the latest games, you really have to ask the question: why bother moving to Vista if Ubuntu is now getting so spectacular? It would be a question worth asking even if Ubuntu — which is free — cost the same as Vista.

As an editor, I am forever using different applications in the same software category, so I understand what you all may be using at home. So, at the simplest level, when it comes to processing information for the magazine, I use Word 2007 but also Google Apps Documents and Adobe's impressive online app Buzzword. For spreadsheets, I use Excel, Google Apps Spreadsheets and Zoho Spreadsheets (and I'm forever forgetting what I've put where). And any images that appear in APC which come from me are processed either with Photoshop, Corel Paint Shop Pro or The Gimp.

What's my conclusion from having to use all these similar apps? That increasingly, they're all much of a muchness — and more, that the online versions are becoming real alternatives to desktop apps, making the browser more important than the underlying OS.

So, if you're a desktop user looking for a new OS that doesn't need to run specific Windows

applications, why go to the expense of Vista when you can get something like Ubuntu? I agree with Ashton Mills who wrote our cover feature on page 72. Version 8.04 is a kind of watershed for Ubuntu — it looks great and does most things as well as Vista, except for running games and Windows-specific apps.

What can I say about Vista? APC covered it enthusiastically when it was first announced, but as it hit the market and the months passed, it became obvious that it was misconceived — to me it seems more like a giant patch for XP (with better security and UI) rather than introducing innovative new functionality, and which also comes at the price of being a bigger resource-hog, not well served by driver writers, and with annoying features such as UAC that assume users are morons. Ultimately, it doesn't really advance the desktop very much. You'll notice Microsoft has now dropped the 'Wow starts Now' campaign for Vista, and is busy talking up Windows 7 and its new touch-screen capabilities.

Hmm... touch-screen capabilities. Is that what we really want from the next Windows? Is Microsoft in danger of missing the point again? If you have some strong thoughts on where Microsoft should take Windows 7, please email me at tsarno@acpmagazines.com.au and I'll compile a selection of the best ideas for the next issue.



ONLINE VERSIONS ARE BECOMING REAL ALTERNATIVES TO DESKTOP APPS, MAKING THE BROWSER MORE IMPORTANT

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▲ 'Windows Vista Capable' means... not much, it turns out.



▲ 'Certified for Windows Vista': you'd be certifiable not to opt for 'Certified'.

MICROSOFT FACES ANTITRUST CASE

Emails suggest customers were misled over 'Vista Capable' PCs.

Currently before the US courts is an allegation that Microsoft knowingly certified underpowered PCs as 'Vista Capable', helping Intel to sell unsuitable video chipsets and fooling consumers into thinking they could run something better than Vista Home Basic.

While Microsoft tries to limit the damage this allegation will have on its reputation, the judge presiding over the case has ordered the release of damning internal emails. These suggest Microsoft has learned nothing from previous antitrust prosecutions, the total cost of which is now well over US\$6 billion.

Microsoft general manager John Kalkman wrote in one such email, "we lowered the requirement to help Intel make their quarterly

earnings so they could continue to sell motherboards with the 915 graphics embedded." A customer buying a 'Vista Capable' PC containing the 915 chipset is in for a big disappointment, because it will only run the most basic version of the operating system. Even Microsoft says this version is for "homes with basic computing needs like email, browsing the internet and viewing photos".

In its defence, Intel argues that Kalkman has no knowledge of its business affairs, but that just begs the question of why this email exists. It implies that Microsoft has been manipulating the market yet again, in direct contravention of US antitrust laws.

DAMNING EMAILS

Other emails released by the court

contain evidence that Microsoft executives knew 'Vista Capable' would mislead consumers into buying inadequate hardware, and knew this well over a year before its launch. You can read them all at www.tinyurl.com/233p6w.

In one such message, dated 31 October 2005, Microsoft's Hakon Strande wrote to another employee that, "The problem with the 'Capable' program is that the customer who buys a 'Capable' machine and Vista retail does not know that 'Vista Capable' != everything just works." (Where '!=' means 'not equal to'.)

Microsoft Chief Executive Steve Ballmer publicly hails the uptake of Windows Vista as a measure of the operating system's popularity, both in terms of upgrades and pre-installations. How many copies

went to punters who believed the 'Vista Capable' sticker over the specification of the machine is anyone's guess. After all, wasn't the sticker on the case supposed to act as a summary of the machine's capabilities?

People have become cynical when it comes to new accusations about Microsoft's business methods. This means that it's hard to see the company receiving a fair trial — or to see how it can avoid yet another conviction and fine.

Whether innocent or guilty, the real problem is that, being so profitable, Microsoft can afford to flout competition law. Maybe the law should punish the individuals responsible for bringing Microsoft into disrepute with something the company's coffers can't simply absorb on their behalf: jail time.

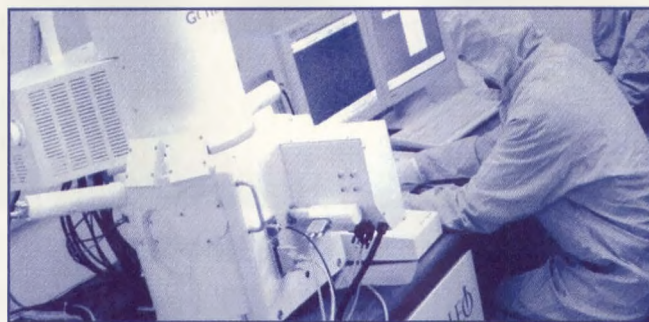
CHEAPER DISPLAYS ON THE HORIZON

Simon Holland uncovers some interesting truths behind our current generation of displays and the industry's future.

Graphene is one of the most expensive materials on the planet. In April 2008, a sample the size of a cross section of a single human hair would cost you more than \$1,000.

Graphene was discovered at the University of Manchester, and Dr Kostya Novoselov, from the Uni's School of Physics and Astronomy, confided recently that liquid crystal devices with electrodes made from graphene showed excellent performance. In a letter penned to the American Chemical Society's journal, he also noted that "graphene-based LCD products could appear in shops as soon as in a few years".

A substantial amount of today's display-based consumer electronics use transparent conducting films, including the liquid crystal displays found in computers, TVs and mobile phones. However, all of these examples use thin metal oxide films based on indium, which has the potential to become expensive in the not too distant future because of finite supplies. Novoselov's colleague Professor Geim warns that it could be exhausted within just 10 years: "Forget about oil — our civilisation will first run out of indium. Scientists have an urgent task on their hands to



find new types of conductive transparent films."

THE FUTURE LOOKS BRIGHT

This is where graphene comes in. Its most advantageous properties are high transparency and low resistivity. Originally discovered in 2004 by Professor Andre Geim FRS and Royal Society Research Fellow Dr Novoselov, graphene can be described as a one-atom-thick gauze of carbon atoms that resembles chicken wire. Compared with indium, graphene is mechanically strong, chemically stable and inert.

Like anything currently under research, the stumbling block is always whether large quantities can be manufactured to satisfy what will inevitably be a massive global

demand. Fortunately, there are now mass production technologies for thin graphene-based transparent conductors.

One alternative production technique tested by Dr Novoselov's team involves the common natural resource graphite and is believed to be capable of producing continuous graphene films with a thickness of less than five monolayers, ideal for use in Joe Public's LCD televisions.

In related developments, researchers at the Max Planck Institute for Polymer Research in Germany established a method of using graphene-based films to create transparent electrodes for solar cells. The Manchester team believes their films are far simpler to create and can be used in both LCDs and solar cells.

WHY IS THE INDUSTRY LOOKING FOR AN ALTERNATIVE?

Traditionally, a single LCD pixel is constructed from a layer of molecules wedged between a duo of transparent electrodes and a couple of polarising filters. This configuration either blocks or allows light to shine through the screen depending on whether an electric field is applied to the polarisers.

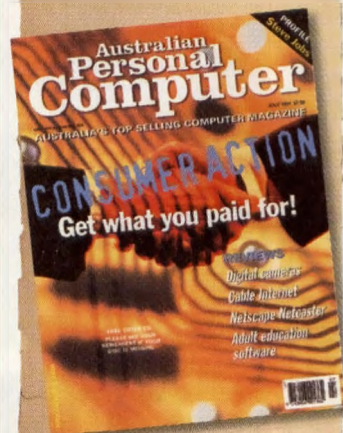
Indium tin oxide is the preferred

chemical element for the electrodes that apply the electric field. In thin layers, it's a transparent and colourless substance, but in bulk form it appears as yellowish to grey. Its main feature is that it's both electrically conductive and optically transparent, which has made it the technology industry's first choice for LCD displays.

The downside of using indium is that resources are scarce and considerably pricey. In addition, the ubiquitous ITO is known to be chemically unstable and can inject both oxygen and indium ions into the active media, which occasionally results in annoying anomalies for the user such as 'image sticking' on the display.

THE (A)PC REVOLUTION

July 1997



SEEKING THE \$1,000 PC

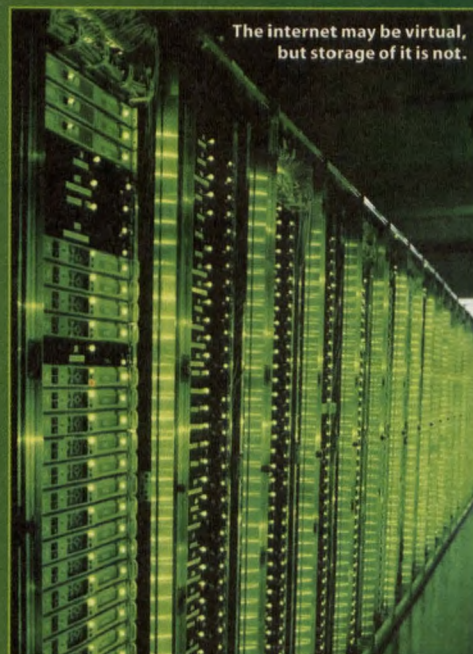
The concept of a sub-\$1,000 PC has gone from being out of the question to a much vaunted reality. Acer has announced its AcerBasic range of 5x86-class machines, which come with a removable 100MB Zip drive and 4MB of RAM and will retail for US\$500.

INTERNET EXPLORER 3.0

Netscape had better look out. The IT giant has finally roused itself and the results are very impressive. Last month saw the simultaneous release of the revamped Microsoft Internet Explorer version 3.0 (IE3) beta, alongside new mail and news clients, and NetMeeting, an extremely ambitious collaboration tool. The interface is smooth and slick, reeking of money well spent. Even better than its good looks, however, are its speed and efficiency.

ENGINEERING COREL

Corel Corporation, now the second largest independent software company in the world, is aggressively positioning itself as the company to watch in the new world of distributed computing and Java.



THE INTERNET IS NEARLY FULL

Gary Marshall investigates whether the internet really will run out of capacity in two years.

The internet will break in 2010, according to a senior AT&T executive. Speaking at the Web 2.0 eForum in April, Jim Cicconi, Senior Vice President of External and Legislative Affairs for the telecom giant told delegates that the electronic sky was falling. "The surge in online content is at the centre of the most dramatic changes affecting the internet today," he said. "In three years' time, 20 typical households will generate more traffic than the entire internet did back in 1995." This ongoing swell in bandwidth demands has been dubbed 'the exaflood'. Many fear that the increased data volume could overwhelm the internet.

Although Cicconi wasn't explicit, the message was clear: governments shouldn't enact net

neutrality legislation, because somebody has to pay for the necessary upgrades before the internet breaks — and telecoms firms would like that somebody to be customers and major content producers. Oh, and some government subsidy would come in handy too.

The telecoms firms' position echoes a 2007 report by Jason Kowal of Analysys Research Ltd (now Analysys Mason), who thanks AT&T profusely in his introduction. "Careful attention should be paid to any new regulation which might adversely impact the business case for internet investment or set preference for one business model over another," Kowal writes. "Second, policymakers should consider methods to encourage

network investment, and third, regulators should not inhibit internet service providers' flexibility to experiment with new traffic management technologies and strategies in order to deliver new services with the quality and security options that internet users desire." Essentially, telcos reckon that they need tax breaks and no more damn-fool talk about net neutrality or 'the internet will break'. But do the figures back that up, or is Cicconi an electronic Chicken Little?

INFRASTRUCTURE UPGRADE

Well, we've been here before. In 1996, Ethernet co-creator Bob Metcalfe predicted that increasing email traffic would — yes! — overwhelm the internet. The

following year he publicly ate his words by liquidising a copy of his speech in a blender.

Is traffic rising? Yes. Is it too much for networks to cope with? Probably not. One of Europe's biggest telcos, BT, was asked whether we'd run out of internet in 2010. Its reply was short and to the point. "BT monitors the network very carefully to ensure that we are always ahead of the game," a spokesman reassured us. "We are currently investing heavily in the core network to ensure that capacity does not become an issue in the future."

We also asked Verisign, whose multi-billion dollar Project Titan is giving the domain name system a major capacity boost. While Chief Technical Officer Ken Silva agrees



Fibre may solve the real capacity problem: the last mile.



IN THREE YEARS' TIME, 20 TYPICAL HOUSEHOLDS WILL GENERATE MORE TRAFFIC THAN THE ENTIRE INTERNET DID BACK IN 1995

that the internet is getting busier, he isn't heading for the hills in panic. "The internet grew by nearly 33 million domain names in 2007, and in the fourth quarter of the same year there was a 27% increase in domain name registrations worldwide compared to the same quarter in 2006.

"The internet infrastructure needs to be capable of supporting this continued rapid growth, as well as the increase in video and other rich media content being added to the web each day, the increased use in business and the rise in popularity of internet-enabled devices."

With Project Titan, Verisign believes it's building just such an infrastructure. "The data that reveals the urgency to increase internet infrastructure is real," Silva says. Verisign is investing in additional network operating centres to manage and provide

more redundancy for traffic; it's increasing the capacity of the domain name query system from 400 billion queries per day to more than four trillion, and it's upscaling the speed of its domain name resolution systems from 20Gbit/s to 200Gbit/s.

LAST MILE LAG

While internet use is growing, it's nothing like that in Asia. According to the University of Minnesota, by the end of 2007 Western European users were using 2.3GB per person per month, and in the US the figure was 3GB — a tiny amount compared to Hong Kong and South Korea, whose internet population use 17GB per person per month. Neither country is predicting a bandwidth crisis — but then, both Hong Kong and South Korea have invested in fibre-optic networks to homes and businesses.

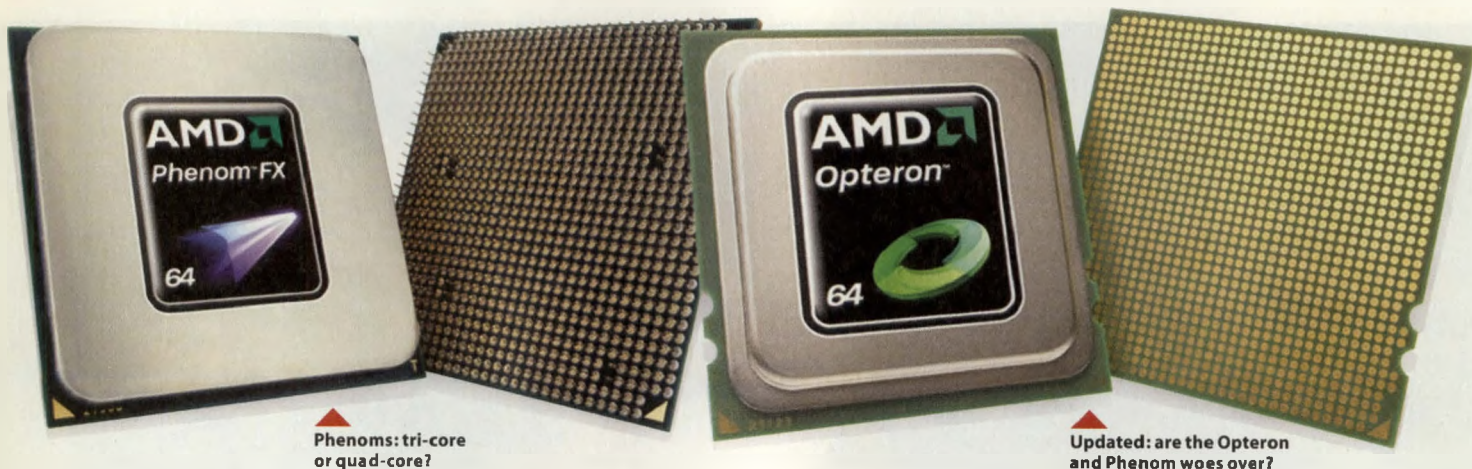
That's no coincidence, because

there is a capacity problem on the internet, and it's in the last mile — the cable that runs into your home or business. According to cable ISP Comcast, just 10 to 12 BitTorrent users can overwhelm the cable loop serving more than 400 customers — which, presumably, is why Comcast is currently defending a legal complaint for throttling BitTorrent on its network. If all homes were connected via high-capacity fibre-optic cables, boosting last-mile capability, bandwidth hogs wouldn't be an issue.

We know what the problem is, and we know what the solution is. So why is AT&T moaning? The answer might be in a 2006 report by analyst Daniel Berninger, who wrote (on GigaOm) that many telecoms companies would rather spend money on buying other companies than on upgrading capacity. "The [telcos] only invest in

more monopoly, which usually means buying each other," he wrote. "The track record shows steadily lower spending on networks to increase free cash flow for acquisitions." By spending less and less over the years, telcos now face a big bill — and if they can persuade us that the sky is falling, someone else might be forced to pick up the tab.

As the University of Minnesota notes, predicting future trends is tough. "Let us recall that a decade ago, when the first Voice over IP systems were fielded, there were wide concerns that they would overwhelm the internet. Indeed, the volumes of voice traffic in those days were far larger than the internet could handle, so a rapid migration of voice to VoIP would have crashed the network. But VoIP took about a decade to take over, and by that time [other] internet traffic dwarfed it."



AMD explains its strategy for coming back

Where does AMD fit in a world where Intel has the top-performing CPUs? Dan Warne spoke with AMD's communications chief, Chris Hook, to find out.

So, where does AMD fit in today's world, where Intel seems to have the upper hand in the top-performing CPUs?

Chris Hook: We hope people look at Cartwheel (the triple-core Phenom and 780G chipset, and, if you like, ATI hybrid graphics technology) in the same way as popular high-quality mainstream cars [like Honda and Toyota], because it's not just about pure benchmarking — it's about solving challenges and usage models that consumers have on a daily basis. Look at a triple-core CPU for US\$145, a 780G motherboard plus a Radeon HD 3450 — our entry-level discrete card, and that gives you a basis to build a \$500 - \$550 Blu-ray-playing PC with that beautiful balance of multitasking, performance, connectivity, energy efficiency, quietness... and I think that as consumers are starting to ask what they're really getting for their investment — is that extra money spent on the top-end CPU really worth it in terms of return?

APC: You mentioned AMD is the only company that supports GPU-accelerated decode of Blu-ray DVDs mastered with Microsoft's VC-1

CODEC and showed a demo of how Blu-ray VC-1 playback goes into jerky slideshow mode on a PC running your competitor's chipset. Why is VC-1 so difficult to support?

CH: Well, it's not — our main competitor has made a mistake in betting on H.264 and MPEG-2, but you've got a situation now where 25% of Blu-ray DVDs and a much larger proportion of HD-DVDs use VC-1 encoding. Discs bought in stores don't say what CODEC is used, so people will often buy a Blu-ray disc and find their CPU is crapping out at 100%. It is obviously a lot more power efficient to run your decoding on a power-efficient graphics chipset than a very power hungry general-purpose CPU.

Not every vendor has succeeded in supporting VC-1, and that has created a wheel of fortune situation for people who buy our competitors' products and want to use Blu-ray DVDs.

APC: You must have been pretty delighted when those results came out of the Microsoft lawsuit showing Nvidia is responsible for 28% of Windows Vista crashes reported by users. What effect has this had on

AMD's standing in the marketplace?

CH: By and large, I don't think our customers were surprised — they have a pretty good idea of where we have a key advantage in stability. What was unique was that we always had that data — but we were limited by Microsoft in our ability to share it.

So when they put out the information as part of their lawsuit that Nvidia was more than twice as likely as AMD to create a crash, it felt really good — based on all the work we had done and engineering resources we'd put in, it was great to see we were being recognised.

APC: Did it boost sales?

CH: Certainly in terms of OEMs, it's very important. It's very important for anybody purchasing PCs in a commercial environment. It's very important for certain groups of people if you want to have the best home computer — having stable drivers is absolutely key.

To broaden the discussion about drivers, we're not only committed to producing stable drivers, but also continuously improving performance. I think frankly, we should be making more noise about it. If we were to stand up and say,

anyone who bought last year's card, we're going to give them this year's card for free, that would be a sensation. But a driver update can actually give that amount of performance advantage too. In some applications, it can mean an 80% boost in performance for free — just by updating your driver.

APC: You're the first graphics vendor to fully support DirectX 10.1 — what does this mean for people, and why has it been so hard for the industry to get to it?

CH: Look historically at what's happened — how much time has taken place between a new DirectX version becoming available, and the first games appearing. There's always a lag — you have to code for the hardware and if you don't have the hardware you can't test your code.

We brought DirectX 10.1 capability to market this January, and we're already seeing the first game title to leverage that — Assassin's Creed. Usually it takes longer — we're getting games a little sooner than we had expected. So AMD is fortunate to be ahead of the rest of the industry.

ATI Radeon HD 3850 graphics cards in a quad ATI CrossFireX configuration on an AMD 790FX chipset-based motherboard.



AMD's communications chief, Chris Hook.

APC: Do you think Intel's massive quad-core price drop is a deliberate spoiler for the release of the tri-core Phenom? Does it make it harder to market them?

CH: I think when you have a monopoly in the marketplace, which it had at the quad-core level for a period of time — basic economics dictates you can charge more. But over time, price drops will happen as competitive tensions heighten in the marketplace. I would categorise it as a competitive move. But I don't think we're seeing lack-of-demand issues related to other quad core offerings in the marketplace.

APC: Is it true that tri-core Phenoms are actually quad-core chips where one of the cores is faulty?

CH: It's been commonplace in the semiconductor industry to disable parts of a chip so you can sell it at various price points — we've been doing it in the graphics industry for as long as I can remember. It would be a mistake to assume our tri-core chips are being produced only because one of cores is broken or not working — it has more to do with adjusting a product to make it fit at a particular price point.

APC: You've just released the updated Opteron and Phenom CPUs that fix the chip error that became such a showstopper upon their original release. Has that been a rough time for the company?

CH: There was a perception in the marketplace that these were buggy chips, when in fact the issue we'd identified would not have created a problem in the client scenario. This one happened to get some bad publicity, but to date, we've not had a single person come to us and say they saw a problem in their client device related to this errata. It was only in a highly specific server environment where this would come to bear.

APC: Your latest GPUs are using a 55nm process, which you say is the densest process currently used in the GPU industry — what will this translate to in real terms?

CH: It obviously creates a better situation. We've got an advantage in

process technology — smaller chips, less power, more energy efficiency, less heat, less cooling required... and you couple that with other features like clock-gating features that allow us to turn off sectors of the chip when they're not used. It allows us to throttle down parts of the chip to provide a very robust power-saving story for notebooks.

APC: You showed a demo at your Singapore technology update event of a truly incredible graphics demo running on your current hardware. If this is where we're at now, can you tell me what will be on the table with the upcoming R700 series of graphics processors?

CH: Well, we're moving towards a level of digital visual realism that we've never seen before. Over time, we've been espousing the view that convergence is finally taking place. Graphics hardware is increasing in performance at a very rapid rate — it's starting to catch up with cinema.

I think in the next year you are going to start to see companies like AMD be able to begin to see Hollywood level visual realism and special effects start to be rendered in real-time through new ways of the GPU being able to render in real-time.

APC: Will AMD become a leader in overall notebook performance?

CH: Certainly we'll be a leader in notebook performance — depending on what aspect of performance you're talking about, and what exactly you're trying to process. But equally important to performance is battery life. The trick is to have that useful balance of battery life. I wouldn't necessarily say it's just about performance — it's also about features, flexibility and battery life.

*Dan Warne travelled to AMD Tech Update Singapore as a guest of AMD. To read the full interview with Chris Hook check out: <http://tinyurl.com/6lbemq> **ATC***



I DON'T THINK OUR CUSTOMERS WERE SURPRISED — THEY HAVE A PRETTY GOOD IDEA OF WHERE WE HAVE A KEY ADVANTAGE IN STABILITY



To tag or not to tag?

Metadata: the scourge of Windows Vista.

When I first got my hands on a copy of Vista during beta testing, much was made of the inbuilt search functionality like search folders and indexing. Then it became clear that most of this functionality was built around metadata — data about data.

Go into the properties of any file and there are useful little tidbits of information like time and date creation, file size, owner's name and so on. This is metadata. Depending on the file type, more specialised metadata is available, like track length and album name for MP3s, or date taken and camera type for digital photos. In certain circumstances, these data tags have value and offer functionality. For example, it's nice to see well-formatted track details when playing music, and if you're interested in photography then those picture tags could be pretty convenient, especially in a large image collection. And in the world of UPnP media streaming, metadata is the common language which lets all those disparate applications and appliances play nicely together.

In my opinion, this is the point at which the usefulness of metadata grinds to a halt, but clearly a development team at Microsoft got a little too excited during Vista's build phase, and now what

is arguably the world's best file management application — Windows Explorer — has had a hideous overlay of worthless functionality foisted on to it by default. Have a wander through a user profile on Vista, and instead of useful metadata like time and date stamps or file type, you're presented with bewildering alternatives like "Date taken", "Tags" or (my personal non-favourite) "Rating". Who did Microsoft think was going to buy Windows Vista? Some bizarre group of people in a basement who spend time cataloguing personal data by rating? What happens if you spend hours rating all your music, and then have a mood swing?

My little rant is based largely on personal aesthetics, which obviously not everyone will agree with, so here are some more sober arguments. My dislike of metadata in general comes from the fact that it's a non-hierarchical naming structure, which makes it non-scalable in nature. In other words, tagging your data isn't the same as naming the files properly and putting them into relevant folders. If you organise your data, you know where it is and can find it again, regardless of how it's been tagged. And if you don't remember, well that's what intuitive folder naming, indexing and searches are for.

Visualise a folder with 40 files in the root. In this case, metadata



might actually be of some use. Now bump it up to 400 files. Or 4,000 files. If you want to filter the view to try and make sense of the confusing mess, your options are limited and unless you've spent the time going through and tagging the files appropriately it's still going to be a mind-bending mess with guaranteed false positives. And if you've got the time to go tagging, why not just organise the files? It's actually quicker.

For me, nowhere is this problem better highlighted than in Vista Media Center. The Video library will happily browse a folder structure but the Music library relies completely on metadata. I did take the time to tag all my MP3s, but

Let's play tag? The increased reliance on metadata tagging in Vista is cause for concern.

with a collection of over 8,000 files no amount of tagging will let me find what I want easily. This isn't functionality — it's inbuilt frustration. Yes, you can change the views in Windows Explorer, but Vista is stubborn when it comes to letting go of the default views, and some applications like VMC can't cope without it. Hopefully this foray into the touchy-feely world of personal data tagging will be short lived. For all its uses, metadata is not a file management system, and Microsoft needs to stop treating it like one. [BPC](#)



TAGGING YOUR DATA ISN'T THE SAME AS NAMING THE FILES PROPERLY AND PUTTING THEM INTO RELEVANT FOLDERS



HastalaVista

by
James Bannan

James Bannan is a systems manager at St Leonard's College (Vic) and APC's resident Windows expert. He'll be checking out Vista for you every month.

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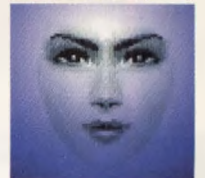
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CISCO



Celebrate with Wine

It's not emulation. It's not virtualisation. It's Wine. And after fifteen years in development, it's 1.0 status is big news for Linux users.

When the Wine project began it had a lofty aim: to recreate Windows libraries under Linux in order to allow Windows programs to run on the penguin platform. At the time, and lacking access to the actual source code to Windows, it was recognised to be both an epic and admirable task.

That was fifteen years ago.

Now the Wine project has recently set free its first version 1.0 release candidate. For most of us who have used Wine over the years every now and then since its inception in 1993, it's strangely odd to consider — you get used to a product being pre-1.0 and, considering the rate of change of Windows over the past decade (and looking forward) and the work the developers have to do to update Wine to accommodate these, it was easy to assume it would forever remain a pre-1.0 product. Since Windows is always evolving, so too will Wine.

In the spirit of recursive acronyms that began with GNU (GNU's Not Unix), Wine stands for 'Wine Is Not an Emulator' and represents a unique approach to cross-platform compatibility. As its title suggests it doesn't emulate Windows, and it doesn't virtualise it either — instead Wine provides a



Wine provides a translation layer, letting you run Windows apps.

Warcraft and Valve's popular Half-Life franchise, in addition to the Steam client itself).

It also shares code and works with both Transgaming and Codeweavers, two companies which produce enhanced and modified versions of Wine (Cedega from Transgaming, CrossOver from Codeweavers), tailored to playing games and running Windows office and productivity applications respectively.

Curiously, Wine is also related to something else we've all become familiar with recently: at one stage in Wine's development, Corel got involved and supported Wine development in addition to its own Linux distribution. When Corel eventually spun off its distribution division, some of the developers went on to form Xandros — the Linux distribution that now powers the Eee PC.

So if, as our cover feature this month explores, you finally decide to jump into the penguin pool and replace Windows with Linux, you can still take advantage of some of your favourite Windows applications and run them natively on the Linux desktop, all thanks to the fifteen-year journey that is the remarkable Wine project. [ETC](#)

translation layer using native Linux libraries of Windows functions to allow Windows programs to run as-is on the Linux desktop.

This is mind-numbing to consider — it would be a hard enough task alone to port Windows libraries to Linux with the source code; it's monumentally harder when you have to reverse-engineer the Windows libraries to do it.

But that didn't stop the Wine project, and as each new release added more support or fixed bugs in the current implementation, more and more Windows programs could be run natively on the Linux desktop — without even having a copy of Windows installed on the machine! Running Windows programs without Windows? It's a

remarkable achievement no matter how you look at it. And so when you think about it, Wine approaching a 1.0 release really is an impressive milestone.

Even though today there are Linux equivalents for most Windows programs, Wine still plays an integral part in the application framework of the Linux platform. For one, Wine plays a big role in that last bastion Linux has yet to conquer: games. While it originally started out focusing on applications, today Wine actually provides DirectX support, including Direct3D up to Direct3D 9, though there is still lots of work to be done here. As a result, some Windows games can be played using Wine (including giants such as World of



RUNNING WINDOWS PROGRAMS WITHOUT WINDOWS? IT'S A REMARKABLE ACHIEVEMENT NO MATTER HOW YOU LOOK AT IT



LinuxWindow

by
Ashton Mills

Editor of the Linux Pocketbooks series, and now with CHOICE magazine, Ashton has been a tech journo for over 12 years, including five years with APC.



Belkin adds N1 Vision ADSL2+ Modem-Router to its range

The most advanced interactive network display

Belkin's N1 Vision Wireless Modem-Router shows relevant network information on its interactive network LCD display. It's ideal for streaming video, music, and photos; online gaming; surfing the web; chatting with friends; and emailing.

Features:

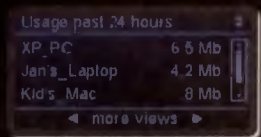
- Over 15 informational screens, plus additional screens planned in future firmware upgrades
- Plug-and-play "CD-less" setup
- 3x3 MIMO design for the fastest wireless speed and best coverage
- 802.11n draft 2.0-compliant
- 4 Gigabit ports



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Monitor your download and upload speeds in real-time.



Network Status
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Call centre spectaculars

End User is regularly leaked transcripts of the dumbest users recorded in call centres. This one's a beauty.

Call centres try and ensure that what a caller says stays in the call centre. A reader, who we'll call 'Jay' to protect his identity, sent us this conversation with 'Warren' (name also changed), from the helpdesk of a major Australian company.

Jay: Hello, Large Australian Company Helpdesk, this is Jay, how can I help you?

Warren: Oh hi, it's Warren from Remote Accounting — are you the computer man?

J: Yep, that's me, what can I do for you?

W: Well my computer doesn't work any more.

J: OK. Can you tell me a bit more perhaps?

W: It was working fine and now it's stopped.

J: Stopped?

W: Yeah it's stopped. The mouse works but I can't type anything.

J: Is there any message on the screen?

W: No — it's just sitting there and I can't enter anything. I think it's a dud.

J: (Thinks: 'there's a dud here all right and it's probably not the computer.') So what was happening when it stopped working?

W: I don't know — I wasn't here.

J: You weren't there?

W: No, I just went to get some coffee and when I came back it wasn't working.

J: Did anyone else use the computer while you were getting your coffee?

W: No, I'm sure they didn't.

J: OK, I think someone may be playing a practical joke on you. I want you to check the keyboard connections for me.

W: Oh — OK — how do I do that?

J: Right, just lift up your keyboard and find the cable that comes out if it and then follow that to the back of your computer and check that it's plugged in nice and tight...

W: I can't!

J: No no — it's not hard — just lift up your keyboard and find the cable...

W: But I'll get wet

J: Pardon?

W: I'll get wet.

J: How will you get wet?

W: Well the coffee will spill out...

J: The coffee will? Is there coffee in the keyboard?

W: Yes... but it wasn't my fault!

J: Let's get this straight: you've spilt coffee into your keyboard and you're wondering why it doesn't work?

W: Perhaps I can dry it out?

J: Why didn't you just tell me in the first place?

W: I was afraid you'd make me pay for it...

J: !@#\$%^&*().

TALES FROM PC HISTORY

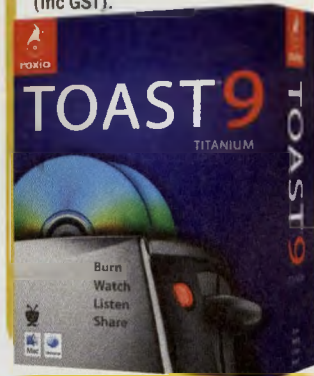
Many years ago Justin Dorigo from Maylands, WA, was working as a help desk operator for CCH Solveware in Melbourne on a contract for the package Tax93 — a very buggy piece of software. He says: "I needed to see the data for a particular file, and walked the customer through the process of copying it onto a 5.25in disk. The customer then dutifully photocopied the disk and popped it in the mail. Upon receiving the mail, I phoned the customer and explained I needed the actual disk. She then mailed it to me — but had folded it to fit in the envelope."

BIT OF INTROSPECTION

As an IT Manager with 40 years in the industry, Alan Smith of Toowoomba, enjoys End User but admits to a "degree of embarrassment", that computer pros take a superior attitude to the mistake of their customers. Alan points out: "After all, we're the geniuses who invented that cryptic 'Error Type 11' message for a user to misinterpret. We're the ones who design a USB cable that (quote) 'fits perfectly into an RJ45 size port', and then snigger at the stupidity of someone who believes it might go there!" Perhaps we computer types need to recall the old proverb: 'Physician, heal thyself!'

WINNERS!

The launch of Roxio Toast 9 Titanium redefines Mac burning. Toast 9 allows consumers to record high-def content from high-def camcorders and Blu-ray discs, as well as their favourite HD programming from Elgato's EyeTV devices. Users also have the option to burn HD video and slide shows on standard DVDs. For on-the-go entertainment, Toast 9 introduces Roxio Streamer, which allows users to stream video content stored on their Mac to a Wi-Fi connected iPhone or iPod Touch or any internet-connected Mac or PC. Toast 9 also offers the ability to capture streaming audio for recording internet radio, and allows captured music tracks to be automatically tagged with song titles, artist or other related information. RRP \$179.95 (inc GST).



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Send in your tales of woe involving dumb end users or incompetent techies to apcenduser@acpmagazines.com.au and if we print it, you'll win a prize. You must supply contact details in order for us to verify your contribution.



EndUser

from
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Ponderous postings. . .

One reader's futile struggle to control what makes it into his inbox demonstrates that spam is in the eye of the beholder. Watchdog investigates.

I am writing to you because I wrote to the Australian Communication and Media Authority twice about this and its answers were typically bureaucratic: nothing. I moved to BigPond as the ISP for my home broadband a few months ago. Since then I have been at the receiving end of spam from BigPond, which I have been unable to stop. BigPond has two spam streams, one of which can be stopped using the 'Unsubscribe' button, though it is very difficult to use and one has to be a member to be able to unsubscribe.

Its second stream is a so-called 'newsletter' called 'Ponderings', which cannot be unsubscribed from as BigPond maintains I agreed to it in the contract. Although they call it a 'newsletter', it contains nothing but advertisements of their products, and I do not want to receive it. The BigPond contract is a verbal one, a taped agreement, and I can't remember whether it

actually specified that I will have to accept its 'Ponderings' spam letter, but I doubt it, because if such a requirement was mentioned, I would not have agreed. I have never signed a hard copy contract with BigPond, nor even sighted a contract, as everything is done on the phone. Even when it installed the broadband link, its technician 'accepted' everything to make it work. I did not accept anything at that stage either.

I do not receive any other spam, because I am very careful not to leave my internet address all over the place. As a result, the only spam I receive is the BigPond 'Ponderings' newsletter, and I want very much to get rid of it too.

I would be grateful if you can advise me whether what BigPond is doing is legitimate; that is, forcing spam messages when the customer has asked them to refrain from doing so, and if not, tell me how I can get it stopped. The alternative

is to cease using BigPond as my ISP, but I am keeping that as a last resort. Also, I think others who wish to sign up with BigPond should be warned that they are signing up for spam as well.

Jay de Silva
Glen Waverley, Vic

Watchdog contacted Telstra and informed them of Jay's grievance. Specifically, we asked the company what it had to say in relation to Jay's accusations that Telstra is sending spam to its customers?

Dear Watchdog,
BigPond communicates its service-related messages with its customers through a newsletter called 'Ponderings'. This newsletter contains useful information about a customer's BigPond service and our products. Ponderings is our primary correspondence with our customers, and important information such as tips on internet

security, managing usage and how to use various features of the service is communicated via this newsletter. By agreeing to the terms and conditions for a BigPond service, customers agree to receive Ponderings. As this is our main method of communicating service-related messages to our customers, we are not required to provide an 'opt-out' feature.

BigPond also sends its customers, with their consent, other information on BigPond products and services, our Member Offers program and other BigPond offers which may be of interest. Our customers are able to unsubscribe from receiving these marketing newsletters. Unfortunately, in Mr de Silva's case, due to an oversight he was not removed from our internal marketing lists as he had requested. We sincerely apologise for this and have removed Mr de Silva from the marketing lists. He will continue to receive the non-marketing version of our Ponderings newsletter where the dominant purpose of the message is service-related.

Craig Middleton
Group Manager
Corporate Affairs, BigPond

I THINK OTHERS WHO WISH TO SIGN UP WITH BIGPOND SHOULD BE WARNED THAT THEY ARE SIGNING UP FOR SPAM AS WELL



Got spam? Reader Jay's case highlights that one man's service information is another man's poison. . .

Jay thanked APC for pursuing the matter and confirmed Telstra had been in touch: "They informed me that they will see that I am taken off the list from which I have so far unsubscribed from four times. But what I wrote was about the spam that I cannot unsubscribe out of, the one called 'Ponderings'. Though they say it's member information, it has offerings from Telstra and associated companies. I don't think BigPond is within rights to send customers something they do not want.

"I mentioned to the Telstra person that had I known I would be subjected to this spam I would not have signed on. He did not have anything to say to that. But the fact remains that, if not for your call, they would have continued blithely on, with no regard for the customer. It does not speak too well for their customer relations."



THE LITTLE VIDEO CARD THAT COULD

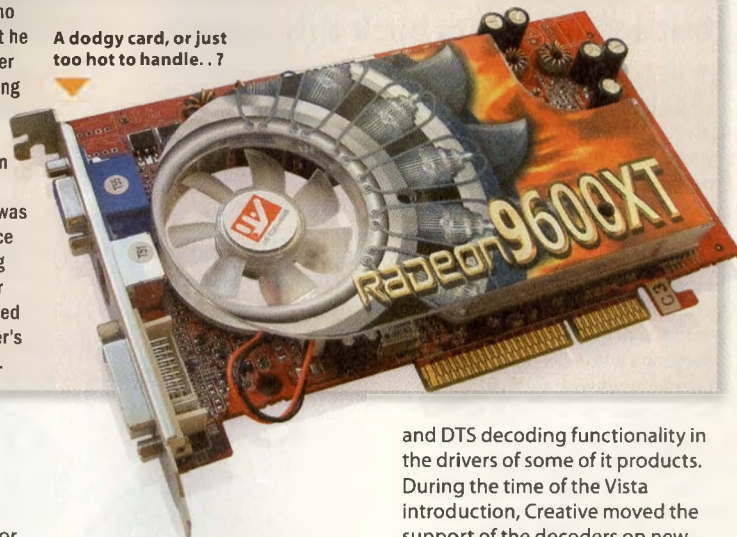
Benjamin Wong of Bonython, ACT, was at the end of his tether with a glitchy graphics problem when he wrote into APC Watchdog. Ben purchased a full set of computer parts from Umart International (www.umat.net.au/au) (not related to Umart Online, www.umat.com.au) and built his PC but kept running into issues with BSODs and random artifact crashes. Ben isolated the card as the source of problem, but when he contacted Umart and asked them to check the card, Umart's support staff indicated that they couldn't find any errors with it. When Ben received the card back, it still crashed his system, but again Umart told him that, since they found no errors with the card, a replacement card was not an option.

Watchdog contacted Umart International's Sales Manager Jon Mascord, who told APC that Umart staff tested the video card with: "3DMark and ATITool (the toughest of tests to my knowledge) and found no artifacts at all. I would suggest that he try his card in his brother's computer and also try changing drivers, running default BIOS options etc." In the event that nothing worked, Jon suggested Umart would test it again (and pay for postage). Watchdog informed Ben of Umart's offer and was happy to later hear back Jon's advice hit pay dirt: "I apologise for wasting your time. I found the problem after reading Jon's response. He suggested to place my video card in my brother's PC to see if the crash still occurred.

After an hour of testing his system did not crash, and considering his case has six fans (mine only has two), I concluded it to be an overheating problem. Jon suggested downloading

RivaTuner to increase the card's fan speed. Increasing it to full speed worked. After an afternoon of testing and not a crash in that time, I think it's safe to say the problem is solved."

A dodgy card, or just too hot to handle. . ?



CREATIVELY CRIPPLED?

Creative has had a poor track record of releasing Vista drivers for its range of sound cards over the last year, blaming Microsoft for the redesigned audio architecture in Vista.

A talented modder called Daniel_K managed to enable many of the features that were missing and

released his modded drivers on the Creative forums (<http://forums.creative.com>). Daniel_K did not require payment but did ask for donations.

Creative was angry at this, claiming breach of IP [and posted a lengthy 'cease and desist'-style caution to him on the forum]. This caused a huge stir on the forums and there was a large backlash against Creative as it was felt Daniel_K was the only one that was helping the community to use all of the features of their sound cards.

Even worse, Daniel_K released information that Creative was deliberately disabling features

in their drivers — crippling their existing products to force people to purchase new products when released. Apart from the ethical considerations, is Creative legally allowed to disable features that were advertised?

Whatever the outcome, Creative has created a PR nightmare and has lost many customers as a result. I know I will not purchase a Creative product again.

**Tate Morgan
Melbourne, Vic**

Watchdog invited Creative Labs to respond to Tate's accusations that the company was deliberately disabling features in their drivers. Nicholas Ho, Marketing Manager for Asia Regional Marketing provided APC with the following official Soundblaster Team response to the issue (also to be posted on the Creative Labs forums).

Dear Watchdog,
Prior to the introduction of Vista, Creative provided Dolby Digital

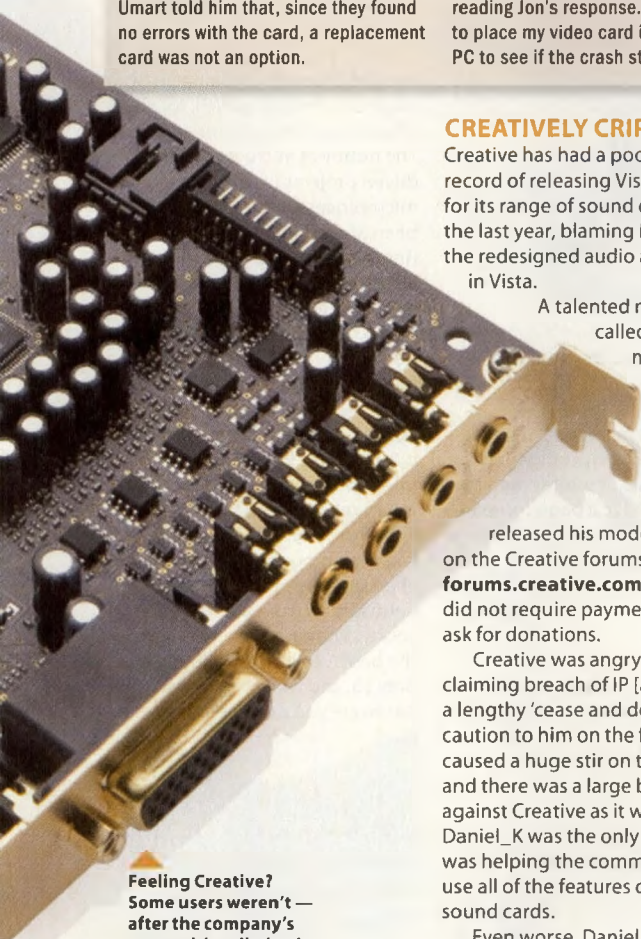
and DTS decoding functionality in the drivers of some of its products. During the time of the Vista introduction, Creative moved the support of the decoders on new shipments of the relevant sound cards to a bundled software DVD player application, for both XP and Vista.

When Vista drivers were first made available for sound cards that had shipped prior to the introduction of Vista, they were posted from the same drivers that were targeted for new sound card purchases, and, as a consequence, no longer contained the decoders. In response to the forum members' questions and concerns, Creative has now created separate drivers that are specifically designed to fulfil the needs of the previously shipped products.

There are two versions of the drivers, one for Audigy and one for X-Fi products. Both new drivers will require Vista SP1. The Beta version of these drivers will be made available during the week of May 12th.

The final release version of these drivers will be made available in late July or early August.

The Soundblaster Team



Feeling Creative?
Some users weren't — after the company's recent driver limitations (and its subsequent legal manoeuvres).

watchdog@acpmagazines.com.au

Has an IT vendor or telco stuffed you around? Let us know about it and we'll chase them for a solution on your behalf. Letters sent to watchdog@acpmagazines.com.au must include the writer's full name, street address, suburb, state and phone number to be considered for print publication (please also include details such as invoice numbers and people you've spoken to). Address and phone details will not be published. All correspondence becomes the property of APC and is subject to editing.

The consumables business

Few things stir our readers like the costs of printer consumables — but a vendor hits back this month.

In response to Peter Croft's letter in the May 2008 edition of APC — you should have done your research on consumable costs before you purchased your machine. This has nothing to do with Canon being environmentally irresponsible; they are running a business, and the majority of the profits of printer manufacturers come from ink/toner sales. As someone who sells printers and the ink that goes with them for a living, it is a source of endless frustration that people continue to come into my store and complain about the cost of the ink for the printer they just bought. My answer to them? You don't complain about paying for mobile phone calls after you outlay hundreds of dollars for a handset do you? Same deal here.

Christopher Lord
Wodonga, Vic



Rethink the ink: there's more to this story than one reader's opinion...

INKJET IS WORSE

I have little sympathy for last month's APC Feedback 'letter of the month' writer. Had Peter Croft purchased an inkjet instead of the colour laser he would have been even worse off financially.

I presume Peter printed approximately 5,000 pages with his LBP-2410 in the two years it was working (based on Canon's projected toner and drum life). Canon released the ip4000 inkjet

printer in the second half of 2004 to much fanfare, so I thought this inkjet printer might do for cost comparisons. It had an RRP at the time of \$299.

I have calculated inkjet cartridge replacement costs for printing 5,000 pages (using Canon's ink cartridge projected life) at \$980. What should also be factored into this comparison is that the ip4000 print head would have packed it in at 5,000 pages printed (according

to its manual), costing \$190.

Print costs per page is a reasonable basis for comparing the operating costs of printers and the colour laser at 12c a page compares very favourably with the 23c a page of the inkjet.

Jeff Little
Milawa, Vic

OPERA REVIEW

The web browser Opera appears, by and large, to have been ignored

by the computer magazines. I find it somewhat puzzling that Firefox appears to be raved about when it is not really any better than Opera. Opera is the best of the web browsers that I've tried out. (Of course, just about any web browser is better than IE.)

GS Williams
Auckland, NZ

BEEN THERE BEFORE

You described the Arduino platform as ground-breaking. Well, for your info, you are wrong — dead wrong. The hobby of microcontroller driven projects (as opposed to microprocessor driven projects) has been around for several decades. Another thing that you raise is that it is open source in both hardware and software. I have yet to see a microcontroller platform that doesn't have freely available hardware designs, and there are many open source software bundles for other microcontroller options. Take PICaxe microcontrollers (see www.microzed.com.au) for example. They are extremely easy to use (you can even program them in flow charts) — the programming hardware is two resistors and a DB9 socket. They are extremely cheap: the basic version (PICAXE-08) costs only \$3, and with the programming hardware you can create your first

letter of the month

WIRELESS VISION

Rather than the government arguing about who should get the contract to upgrade the copper network for the planned national broadband network, why aren't we looking to the air with technologies such as WiMAX?

Wireless is the future and it could save money putting towers up rather than running more cables through the ground. This would be able to open the doors for fairer competition. Where there is no longer a forced monopoly, the customers could truly

talk with their choice of company that gives them the best deal.

WiMAX and anything wireless such as 3G will still be improved, even the latency 3G customers are experiencing. If you think about it, how long is a 10Mbit/s connection going to satisfy Australians, when in parts of Asia they are already on 100Mbit/s networks? The Rudd Government should be aiming for speeds of beyond 10Mbit/s so that when the network is completed we aren't going to be facing the

same problems such as lost income for businesses.

Nielson Plug
Albany, WA

Nielson wins this issue's Letter of the Month prize, a Logitech Cordless Wave Desktop keyboard and mouse set valued at \$179.95.



The appeal of Arduino is that it's not "rocket surgery".

electronic "hackery". But my favourite

innovation of all, referred to in the article, was the brand-new mixed metaphor, quoted by Marcus Schappi — "It's not Rocket Surgery". I've heard of rocket science and brain surgery, but this hybrid is a beauty! I'm sure my wife, who is a surgeon, will be using it from now on.

Phil Jacombs
Seaforth, NSW

microcontroller project for less than \$5. A sight less than the "cheap" \$50 starter price claimed in the article. Still cheap, but much more powerful option than PICaxe are the PIC family by www.microchip.com (the highest speed is 120MHz on these incredibly powerful little chips) and the AVR by www.atmel.com, one of which incidentally is the core of the Arduino. Finally there are another three options which are less known and generally more expensive: Splat (www.splatco.com), Rabbit (www.rabbit.com) and the Z8 Encore series by the once leaders of the micro world, www.zilog.com. And I'm sure there are many more options out there.

William Andrew
Lane Cove, NSW

ROCKET SURGERY

What a great story about the Arduino phenomenon! I'm looking forward to the opportunity to try out a few crazy ideas with this 21st Century Meccano-equivalent. It reminds me of my early days at NSWIT (what UTS was before it grew up and became a uni), when we used 8080A processors (yes, more than three generations earlier than a 386!) to try out some

FEDORA IS BETTER

I recently installed Fedora 8 (Werewolf) on my boss's old Compaq Presario M2000, which has bad sectors on the hard disk. Its performance is better than any Windows OS running on an HDD with bad sectors. It seems that the Ext3 file system is a lot more stable than NTFS. I had tried to format and reinstall XP but that did not help its performance. In the end, I resorted to Fedora and I must say I am very happy. My main concern now is to get Windows-conditioned users to try Fedora. Anyway, to all Windows users, try Linux, you might like it.

Bernard Sinai
Boroko, Papua New Guinea

GET A FIRST LIFE!

As if there weren't enough creeps and predators cruising the internet for sex, you had to go and print an article telling them how to do it (APC May 2008)?

It's not surprising that there's a certain section of the community whose first reaction to new technology is to ask, "Can I use it to have sex?" What is surprising is that there are so many of them who are pathetic enough to write to a computer magazine asking how to do it. Just how sleazy does a request have to be before

APC replies, "Work it out yourself, dirtbag!"?

You would have done them and everyone else a favour if your article had consisted of one sentence: "Get a first life!"

Bill Street
Wonthaggi, Vic

CAPTCHA LEGALITIES

In response to David Morrell's letter last month entitled "Captcha Your Details" (APC June 2008), regarding the legalities behind the 'Create CAPTCHAs in PHP' article, I must add that there are a number of ways to use a CAPTCHA and still provide acceptable means of access in lieu of the Disability Discrimination Act.

If you have limited skills in PHP use APC's CAPTCHA system explained in the earlier article and include an email address that can be used to contact the administrator of the forum if the visitor is having difficulties with the system. This will weed out robots as they require a proper email with explanations.

Otherwise, I suggest using a system called reCaptcha (www.recaptcha.net). reCaptcha provides you with the tools to set up a CAPTCHA on your own web site, utilising their brilliant system. What makes reCaptcha brilliant is that when a user proceeds to enter the CAPTCHA, they are displayed with two words. One word is a known word — the other is a word randomly selected from a range of books that have not been converted into a text version, rather it is only on print. So, not only are you protecting your system from robots, but you're also helping digitise books. Of course, this alone does not comply with the Disability Discrimination Act — which is why it also provides an audio version where it will speak a range of numbers, and allow visitors to enter those numbers.

Michael Casha
Craigieburn, Vic

Have your say at apcmag.com/epinions

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This month in Labs. . .

High speed, no need

When it comes to mobile phones I'm far from a power user. I need a phone to make and receive telephone calls and send/receive SMS messages. I don't use the MP3 functions, very rarely pull out the camera function, and the devil's throwing snowballs if I'm going to surf the web on it.

It seems I'm not alone. The Australian Communications and Media Authority released a report that stated though one third of Australians have a 3G phone, only one third of them actually use 3G services. There are two reasons that I can think of as to why this is the case, and they're not a huge stretch of the imagination.

Firstly, it's still too expensive. Though carriers now offer mobile data plans, they're still expensive when compared to 'dedicated' mobile broadband or a cup of coffee (to use the shop's wireless). Sure, you pay for the convenience, but when you're dealing with the modern web, 1GB or 2GB a month doesn't go far if you're really going to commit to using the internet on

your mobile phone. Start hitting Google maps, download a few games and ringtones then refresh your webmail every 30 minutes and it eats it up very, very quickly.

Secondly, and perhaps most pertinent is the platform itself. It's not easy to use, it's not fast, convenient or even fun to try trawling the web on a 2in screen without a mouse or pointer. Many web sites still don't render correctly; if they do, the rendering speed is abysmal and good luck getting Flash or Silverlight working (let alone JavaScript, or even fancier pages using DHTML).

Looking forward, I think we're going to see the abandonment of the mobile phone as a web browsing platform in its current

incarnation. Someone will take the challenge of creating custom applications for mobile content delivery, then price it correctly. Furthermore existing web sites will start talking to you through your phone's main functions (voice and text) rather than squeezing themselves onto the tiny screen.

As an aside, I promised to report back once our electricity bill for the quarter had come in, to see if there was any discernible difference between running my PCs all day and night then switching to a lower powered server to take care of the grunt work. The bill has arrived and it's over \$60 less than last quarter. Although I wouldn't guarantee that it's all to do with the new setup, it's definitely food for thought. **APC**



I THINK WE'RE GOING TO SEE THE ABANDONMENT OF THE MOBILE PHONE AS A WEB BROWSING PLATFORM IN ITS CURRENT INCARNATION

Geek

NICK RACE – TECHNICAL EDITOR



▲ All together now: a good workhorse for the typical family setup.

Acer Aspire 3200

Good-value quad-core — could this be your next family PC?

The phone rings, and before you've even put it to your ear the sweat has begun to bead on your forehead. You've been expecting this call, and the dreaded question behind it, for weeks. It's just one phone call — one simple question... but your reply could make or break the next six months of your life.

"Son, which computer should I buy?" asks your techno-illiterate parent.

Answer it incorrectly and you'll be relegated to tech-support hell, visiting your folks every second night to figure out why the keyboard has stopped working or why the DVD drive screams like a banshee during playback.

Get it right and you'll be able to share your love of computing with your folks, safe in the knowledge that they can't break anything. And if they do there's decent support to back it all up, and it's not you. They'll regale you as their favourite child, the one who made it possible to

• CONTACT	Acer
• ONLINE	www.acer.com.au
• MARKET	Everyone
• PRICE	\$1,399

magically view photos on their computer and listen to African tribal music from obscure Zimbabwean web sites.

Acer's Aspire M3200 looks like it could be one such lifestyle-preserving answer to this dreaded question. In the time it takes your Mum to make a nice hot cuppa, your Dad will have the PC out of the box, set up and purring quietly at the Vista Basic desktop. Well, provided you're there to show them where the monitor plugs in — which they'll need to purchase, as the M3200 ships sans display. It's got a decent wireless mouse and keyboard though, as well as a very dinky pair of speakers.

Before we delve inside the case, it's worth noting that the Micro-ATX case itself is quite a tidy piece of work. It's a neat little unit, if not exactly cutting-edge in its

✓ Easy to set up; great value for money.

✗ Vista Home Basic — no Aero Glass here!

8
10

aesthetics, and has front-mounted card readers for numerous card formats, a micro FireWire port as part of the card reader, four USB slots and headphone/mic jacks. On the backside you'll find HDMI and digital optical out, as well as the standard outputs such as USB and DVI-I.

Within the case we find a no-nonsense approach to the components, offering oomph where necessary. The AMD Phenom X4 processor (9600 in our review system) offers an affordable four-core CPU that is as adept at handling video edits of the grand kiddies as it is at running virus scans while your ma watches the latest Martha Stewart Google Video. In the configuration we tested, 4GB of RAM and 500GB of storage were better than expected for the \$1,399 price point.

Considering it doesn't have a dedicated video card, gaming performance isn't too shabby — the integrated Radeon HD 3200 chipset wipes the floor with all prior integrated GPUs. It'll keep your pop happy until he's ready for some real gaming, at which point the Hybrid CrossFireX support will utilise both onboard and add-in video cards at the same time, giving higher performance.

It's more than just the hardware and case that makes us comfortable handing this over to the rellies. The price is great considering it includes 12 months onsite warranty, and as mentioned the setup procedure is certified parent-safe. The pre-loaded software manages to supply basic functionality without overstepping the mark into shovelware misery.

As power PC users, we probably wouldn't use this machine for ourselves. But for friends and family, we're quite content to give the M3200 the APC nod.

Bennett Ring



Toshiba Satellite A300

If you like your bling-bling, then you'll love Toshiba's new Satellite A300 notebook.

This machine goes all-out in the name of in-your-face fashion, with a pin-stripe grey pattern on the lid and around the keyboard, a high-gloss finish that covers the entire notebook, white LEDs and chrome-covered mouse buttons.

Pushing 3kg, it isn't a light notebook by any standard, and it's quite thick around the middle, measuring close to 4cm at its thickest point. But these hefty dimensions are forgivable once you consider the A300's impressive specs. It uses Intel's top-of-the-range 2.5GHz T9300 Core 2 Duo processor, as well as 4GB of RAM and an ATI Mobility Radeon 3650 processor — the same specs as the ASUS M70 we've also reviewed this month (see right).

Thankfully, the Toshiba doesn't suffer from the same performance lag of the M70, despite a healthy helping of pre-installed software. The PCMark05 score of 6,052 is well above average for a notebook in this price range, making it a solid machine for office productivity. Nor is it half bad for gaming, scoring 3,894 in 3DMark06. We were able to get Crysis running at a semi-decent clip using the lowest quality settings, but it's too jittery to be playable for long stretches.

Unique to the A300 is the USB sleep and charge feature, which lets you charge compatible gadgets from any of the four USB ports while the notebook is asleep or in hibernation. This worked for all the

gadgets we tried save for a 16GB iPod touch (although our 80GB 5.5G iPod recharged without a problem).

Another interesting feature we're seeing more of in high-end notebooks is facial recognition for logging into Windows. We haven't been too impressed with this on other machines, but the Toshiba was marginally better. It worked well in different lighting conditions and wasn't fooled by different hairstyles or reading glasses, but it couldn't recognise us with a hat on.

We were prepared to hate the A300's keyboard, which deviates from convention by using a glossy rather than matte finish. It certainly feels different, but after giving it a solid workout we found it didn't make much of a difference for touch typing. The downside is that after a few minutes of typing, fingerprints are clearly visible and make the keyboard look grimy.

Another quibble is the 15.4in display. It's a good-sized screen, but the resolution is limited at 1,280 x 768 — a pixel count we're used to seeing on smaller displays. Colours are also washed out, and horizontal

CONTACT Toshiba
ONLINE www.isd.toshiba.com.au
MARKET Everyone
PRICE \$2,699 as configured

✓ Performance; hard drive; design.

✗ Display could be better.

8
10

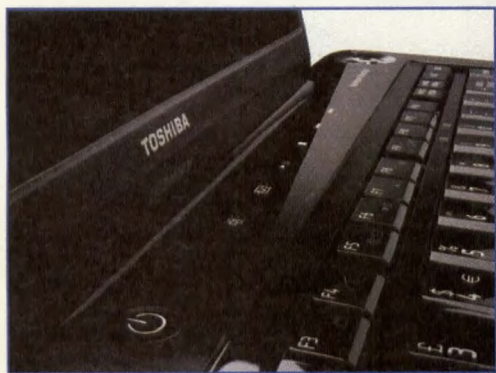
and vertical viewing angles are narrower than normal. The harman/kardon speakers produce sound that's well-balanced and rich, but if you're using this for multimedia, you'll want to spring for desktop speakers to get more volume.

At least you won't have to worry about hard drive space — our review model, which is the top-of-

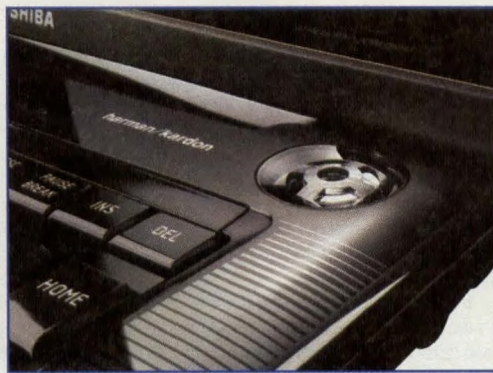
the-range A300, came with a massive 640GB hard drive, made up of two 320GB 5,400rpm platters. Other fittings include four USB 2.0 ports, VGA, Gigabit Ethernet, S-Video, HDMI, FireWire, ExpressCard, five-in-one memory card reader, DVD Super Multi drive, biometric fingerprint scanner, FM radio and a 1.3-megapixel webcam. On the wireless front, it includes 802.11a/g/n Wi-Fi, Bluetooth 2.1+EDR and infra-red.

We tested battery life with our usual DVD run-down test, and with all the power-saving features off and screen brightness set to 40%, it played our test disc for an hour and forty-five minutes — about what we'd expect for a machine with these specs. This translates to around two and a half hours of regular use with Wi-Fi turned off, and if you're travelling, the unusually large power brick adds an extra 750g to your carry pack.

Jenneth Orantia



▲ The A300 goes all out in the name of classy design.



▲ Time well spent: you get used to the A300's glossy touch.

Fujitsu LifeBook P1620

If a flexible form factor is a priority...

Bearing a strong resemblance to the ASUS Eee PC, it's easy to mistake the P1620 for a copy-cat design. But Fujitsu was in the mini-notebook game long before the Eee came along.

In its current iteration, the P1620 is the sort of notebook prized by mobile professionals for its compact footprint, weighing a mere kilo and measuring 232 x 167 x 37mm.

The 8.9in widescreen display is large enough for web-browsing with a generous 1,280 x 768 resolution. The keyboard is considerably smaller than average, but we didn't have any problems working up to full touch typing speed after a little practice.

The main thing that sets the P1620 apart is its convertible tablet PC form factor. The included stylus is a bit flimsy to write with for extended periods, but the good

• **CONTACT** Fujitsu
• **ONLINE** www.lifebook.com.au
• **MARKET** Everyone
• **PRICE** \$2,699

✓ Versatile form factor; port replicator.
✗ Expensive; cursor jumping problem.

6
10

thing is that its head retracts when you press too hard on the screen.

For a pint-sized notebook, the P1620 has a decent set of specs. Its processor is a 1.2GHz Intel Core 2 Duo ULV U7600 (with 2MB of cache and 533MHz FSB), which is paired to 1GB of DDR2 RAM, Intel GMA 950 graphics and a 100GB 4,200rpm hard drive.

We were surprised to find no webcam, but it has all of the other typical inclusions: 802.11a/b/g Wi-Fi, Bluetooth and fingerprint scanner. Two USB 2.0 ports are on-board, as is a PC card slot, SD card slot, Gigabit Ethernet, modem and

VGA. The P1620 also comes with a docking cradle that adds another two USB 2.0 ports and relocated VGA and Ethernet ports.

With the power-saver plan active, we were able to get two and a half hours of web browsing over Wi-Fi using the standard three-cell battery. Fujitsu also has a six-cell available for up to six hours of run-time.

The P1620 packs a serious punch for its weight, but we can't help wondering whether Fujitsu needs to reconsider its price tag. At \$2,699, it's a whopping \$1,800 more expensive than the entry-level HP Mini-Note 2133. Unless tablet functionality is vital in your line of work, we're not convinced that it warrants the huge price disparity.

Jenneth Orantia

ASUS M70

The world's first notebook to offer 1TB storage.

As well as being a full-featured desktop replacement, ASUS's latest laptop is also a portable home theatre, with a Blu-ray ROM drive, full HD 17in widescreen display, high-definition TV tuner and Altec Lansing speakers with Dolby Home Theatre sound processing.

It's one of the most stylish notebooks we've come across, with a glossy dark grey veneer, curved edges, white LEDs and a mix of silver, light grey and black accents.

Sitting in the engine room is Intel's 2.5GHz Core 2 Duo T9300 Penryn processor, as well as 4GB of RAM and an ATI Radeon HD3650 graphics card. Extra features include a multimedia touchpad, biometric fingerprint scanner, 1.3-megapixel 180-degree swivel webcam, facial recognition login, and a HDMI output.

For movies, the generous dimensions of the 17in screen means you're more likely to watch it from a distance, in which case the bundled remote control — which fits inside the ExpressCard slot — comes in handy. The 1,920 x 1,200 res looks extraordinary, with picture quality easily a match for high-end LCDs and plasmas.

The M70 doesn't lack connectivity, with four USB 2.0

ports, FireWire, eSATA, memory card, Gigabit Ethernet, modem, SPDIF, mic and headphone jacks. But the lack of HDCP support in the video card means it's crippled when it comes to watching Blu-ray or DVD movies on a HDTV.

Considering the top-end specs, we were expecting the M70 to scream through our bench-marks, but the results were disappointing. Running PCMark05, the M70 achieved a score of 2,791. ASUS loads a lot of bloatware on the M70, so removing the junk from startup should go a long way towards boosting performance.

The 3DMark06 score of 2,516 is also low for a discrete graphics card; this isn't for 3D gaming.

Desktop replacements usually aren't very fuel-efficient: the hour and a half of battery life it achieved in our tests is about average — this translates to around two and a half hours' worth of regular usage.

Jenneth Orantia

• **CONTACT** ASUS
• **ONLINE** www.asus.com.au
• **MARKET** Everyone
• **PRICE** \$3,699

✓ Design; multimedia; huge hard drive.
✗ No HDCP in video card; performance not great.

7
10



Palit 9600 GSO Sonic 768MB

What's in a name? Well, we're not sure, but check out the value for money here.

Earlier this year Nvidia released the 8800 GS, which was a bit of a silent product: the only brands we saw of the model in Australia were ASUS and XFX, as they were the only brands to sell it globally. If we fast-forward a few months we have the 9600 GSO which is essentially a relabelled 8800 GS.

The 9600 GSO isn't like past models that we've seen that are similar to previous-generation counterparts — this is exactly the same as the 8800 GS. They both carry 96 stream processors, a 192-bit memory interface, 550MHz core, 1,375MHz shader clock and 1,600MHz DDR memory clock. Both cards are also available in a 384MB and 768MB variant. The main difference between the 9600 GSO and the 8800 GS is the fact that the newer 9600 is going to be easier to get ahold of.

The particular version we're looking at is the Sonic from Palit, which carries with it 768MB of GDDR3 memory and an overclock: the core is increased to 600MHz while the memory gets bumped to 1,800MHz DDR. The weird memory amounts are present due to the memory interface; normally mid/high-end cards carry with them a 128-bit/256-bit interface, which

equates to memory amounts of 256MB, 512MB and 1GB.

Aesthetically the card resembles a 9600 GT, coming in at the same length; we have a single PCI Express connector along with a single SLI connector. The reference design carries with it the same single-slot cooler while the Palit version has the same dual slot gold cooler that we're used to seeing.

Inside the package you instantly notice you're missing that full version game usually included in so many of Palit's graphics cards. This gives us the feeling it's designed to come in cheaper than the 9600 GT. Apart from that the normal TV-Out cables, DVI to VGA connector, driver CD and installation guide are included, as is a DVI to HDMI adapter, making it an option for HTPC enthusiasts.

Ultimately what we want to know is how it compares to the 9600 GT, which has a slightly higher 256-bit memory bus, but only 64 stream processors. Under 3DMark06 we find that around 5%

separates the two cards, with the 9600 GSO Sonic having no problems breaking 10,000 3DMarks on a default run. Under the intensive Crysis, both cards score very similarly. The same can be seen in UT3 at the lower resolution while the higher resolution sees the 9600 GT Sonic come out just a bit over 10% faster.

This card on a whole is going to be a bit of a nightmare for the market — the overclocked Palit version is scoring roughly the same as a stock clocked 9600 GT, and sometimes even a little faster. The overclocked 9600 GT is pretty much able to sustain a lead the whole time though. What it's going to come down to is price: the 9600 GT

can be had from \$180 without much trouble. An overclocked Sonic version from Palit is closer to \$210. The 9600 GSO Sonic is going to come in at \$5 more than your average stock clocked 9600 GT; for this you the same performance (or a little better) and more memory.

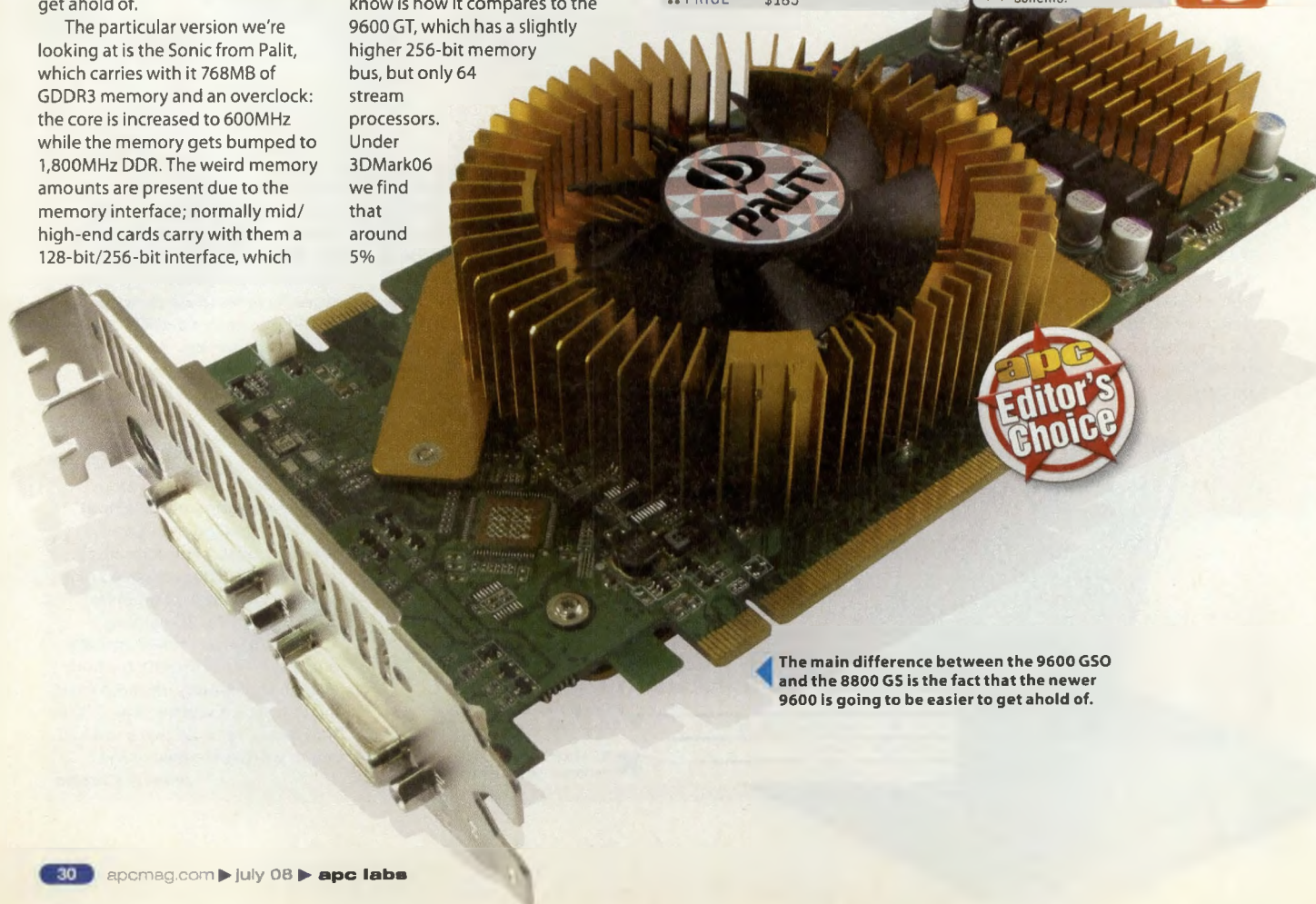
The stock models are going to come in even cheaper again, and with overclocking possibilities they're actually going to become a better-value card when compared to the 9600 GT. More RAM with similar performance and at a similar price means you're probably going to want to get the new 9600 GSO Sonic with 768MB instead of a stock clocked 512MB 9600 GT.

Shane Baxtor

• CONTACT	Bronet
• ONLINE	www.bronet.com.au
• MARKET	Everyone
• PRICE	\$185

✓ Excellent value for money.
✗ Confusing naming scheme.

9
10



The main difference between the 9600 GSO and the 8800 GS is the fact that the newer 9600 is going to be easier to get ahold of.



BFG 9600GT OC2

Zippy, but maybe a bit light on?

The OC2 is the highest-clocked 9600GT card in the BFG range with a reference clock model also being available alongside a slightly overclocked OC variant. While the standard 9600GT clocks are 650MHz on the core, 1,625MHz on the shader clock and 1,800MHz DDR on the 512MB of GDDR3 memory, the OC2 improves upon this by giving us 690MHz on the core, 1,750MHz on the shader clock and 1,880MHz DDR on the memory.

If you want extra performance from the card, firing up an overclocking tool like RivaTuner will help you achieve higher clock speeds. The reference cooler, which has no problems handling the slightly more powerful 8800GT, gives no issues when overclocking to 700MHz on the core and 2,000MHz DDR on the memory. These are speeds that we generally see only reserved for cards using

dual-slot cooling.

Where the card does become a bit light is in its package; with the standard assortment of TV-out cables and DVI to VGA connectors there isn't anything in the bundle that would make it stand out from the pack. However, if the lifetime warranty is more important to you than an outdated game, the bundle does offer some value.

Connectivity is standard. There are two dual-link DVI ports that are capable of driving a pair of 30in monitors alongside a single TV-out connector. Though the reference cooler sometimes runs a little warmer and a little noisier than some of the aftermarket ones, it does manage to keep the card in its stock single-slot status; this means

CONTACT Bronet
ONLINE www.bronet.com.au
MARKET Everyone
PRICE \$220

✓ Big overclock; lifetime warranty; single slot.
✗ Limited bundle; expensive.

7/10

that if case room is tight then you don't have to worry about your graphics card taking up any more space than it needs to.

Apart from the light bundle, the only other real issue with the BFG Tech card is that it comes in a little

bit more expensive compared to others. However, depending on how important the warranty is to you, this may or may not affect your overall thoughts on the value of the card.

Shane Baxtor

ASUS 9800 GTX TOP

Overclocking for the middle-of-the-road enthusiast.

The good thing about the TOP series is that they're highly overclocked cards, generally being pushed to the top as the model implies. The 9800 GTX variant is no different with some big numbers straight out of the box.

While stock speeds on a 9800 GTX come in at 675MHz on the core, 1,688MHz on the shader and 2,200MHz DDR on the 512MB of GDDR3 memory, ASUS ramps this up with a core clock of 755MHz, shader clock of 1,840MHz and a

very healthy 2,350MHz DDR clock on the memory.

Apart from the standard array of DVI to VGA connectors, TV-out cables, manuals and driver CDs, the only other standout in the bundle is the brown leather CD wallet. Unfortunately there is no full version game included. With that said though, there is the standard line-up of exclusive ASUS software on a CD such as GamerOSD, SmartDoctor, Video Security and Splendid.

The 9800 GTX continues to

impress and disappoint all at the same time; the card does offer some excellent performance and is one of the fastest cards on the market, although there is a limited performance increase over last-gen 8800 cards. What the 9800 series has done however is make high-performance computing more affordable with the card launching at half the price of previous speed demons

like the 8800 Ultra. If you find yourself with a 7900 series card or below then you're going to be extremely happy with the performance that the new series manages

to provide at this asking price.

The TOP version kicks performance up a notch by giving us some massive out-of-the-box clocks on both the core and memory. Backed by a three-year warranty and all the normal ASUS goodies, the 9800 GTX TOP is going to make any gamer happy.

The card ultimately does what it's supposed to do, and it manages to do it very well with excellent performance figures from the word go. The card is really designed for people who want to get that big overclock and performance increase without having to get into third-party software and spend the time mucking around getting the higher clock speeds.

Shane Baxtor

CONTACT ASUS
ONLINE www.asus.com.au
MARKET Performance enthusiast
PRICE \$499

✓ Performance.
✗ Limited bundle.

8/10





Thermaltake MaxOrb EX

All quiet on the cooler front (at 1,300rpm, anyway).

The Orb series of coolers from Thermaltake would have to be one of the most well-known cooling series ever created. If you found yourself overclocking in the '90s then chances are you wanted or were using the infamous Golden Orb. The series stopped for a long time, but recently we saw the MaxOrb cooler, which offered support for Intel's Socket 775 processors and AMD's AM2, AM2+, 939 and 754 sockets.

Where the new, updated EX version differs to the standard MaxOrb is the fact that copper has been added into the mix to help keep your processors cooler than ever. With a copper base and 6-pipe design, the heat is quickly moved

from the processor, up through the pipes and onto a number of fins made of both aluminium and copper. The 120mm fan is then used to keep everything at a reasonable temperature while making everything look a little nicer with an embedded blue LED.

With a fan controller built onto the cooler itself, the speed can be varied between a low 1,300rpm putting out about 16dBA up to a little noisier 2,000rpm at 24dBA. At full speed the 120mm fan is pushing out a very healthy 86.5CFM of air — whilst all coming in at 580g, which is pretty standard for a copper-based aftermarket cooler.

As for temperatures: on our Q6600 @ 3GHz with the fan spinning

at the very quiet and slow 1,300rpm, the idle temps are 31c/32c/30c/26c on each individual core. At full rpm we have the cores coming in cooler at 28c/31c/27c/24c.

Overall, the MaxOrb EX is as good performing as it is aesthetically pleasing to look at. The Orb series

have really come a long way since the '90s and Thermaltake has made an extremely capable cooler that is able to get that Q6600 running at 3GHz without any issues whatsoever, all the while pumping out some pretty passive noise levels.

Shane Baxtor



CONTACT	Thermaltake
ONLINE	www.thermaltake.com
MARKET	Everyone
PRICE	\$80

✓	Decent performance; quiet; easy to install.
✗	Little bit loud at full speed.

8/10

Gigabyte iSolo 210

A simple case of airflow, but which colour do you want?



The iSolo 210 is one of the many new cases offered by Gigabyte and is available in three colours: silver, grey and black (although the front of the case, which houses the five 5.25in and two 3.5in bays, remains black).

Towards the bottom of the case we have the power button, two USB 2.0 ports, a single FireWire port and a Line-in and Out jack. Under the hood, the power supply is up top whilst the motherboard sits at the bottom.

Airflow is provided with the help of two 12cm fans: one is located at the bottom of the case, which draws air straight across the bottom hard drive cage, and the other is located next to the I/O motherboard slot, which helps draw air out of the case. With the

power supply sitting up top, it helps push any hot air out the back of the case. While there aren't a huge amount of fans, the decision to use larger 12cm ones in well-thought-out places means that the airflow on a whole is very good.

Gigabyte has managed to cover upgradeability and aesthetics very well: there's a bit of shape to the case and the blue glow is a very nice touch as well. While some people no doubt would prefer something with a bit more going on in the looks department, if you're looking for an elegant mid-tower that's going to cover the needs of most users, the iSolo 210 could be the case of choice. Now you just need to decide which colour you want.

Shane Baxtor

CONTACT	Gigabyte
ONLINE	www.gigabyte.com.au
MARKET	Everyone
PRICE	\$159

✓	Well designed with plenty of functionality.
✗	No side fan and a little plain for some people.

8/10





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Lenovo ThinkVision L171 Flat Panel

Is there still room in our big-screen market for 17in?

While most of us have moved on to larger LCD screens for our computers, there's still a place for smaller displays. The Lenovo L171 Flat Panel Monitor could find a place in many environments such as point-of-sale systems and offices where space is at a premium. Lenovo touts the L171 as being best suited for general business applications such as word processing, spreadsheets, data entry and business graphics.

The L171 was dead easy to set up. There's a single connection option, VGA, so you'll be able to connect it to almost any computer, new and old. However, that didn't seriously diminish image quality. Images, text and video all displayed clearly. The LCD surface is matte so there were no annoying reflections.

Rather than going for a widescreen form-factor, the L171 retains the traditional 4:3 aspect

ratio. This is a good thing, as typically 17in widescreen displays are too short for office use.

While most screens at lower price points add a USB hub and/or speakers, Lenovo has left those out. However, they have made sure that the L171 carries out its primary task as a computer monitor with aplomb. The maximum resolution of 1,280 x 1,024 is satisfactory for business use. Diagonal lines and arcs displayed with no jaggedness and the viewing angle was excellent. While images are optimal when viewed from directly in front of the monitor, we could still see the screen clearly from almost 180 degrees to the side. The backlighting was even with no bright or dull spots. Topping it off, DVD playback on action sequences with rapid-firing lasers and fast-moving spacecraft was excellent with no noticeable blurring.

Getting the L171 into a decent working position is a little tricky. There's plenty of forward and back tilt but no vertical adjustment.

The L171 is not a display that will suit everyone but it's not trying to be all things to all people. It's primarily designed for business users, although it does perform well at multimedia tasks. It does have many limitations but it can still fill a need in some niches.

Anthony Caruana



CONTACT	Lenovo
ONLINE	www.lenovo.com.au
MARKET	Everyone
PRICE	\$348

✓	Display quality; build quality.
✗	No DVI; one input only; no height adjustment.

7/10

Lenovo ThinkVision L220x LCD

Lenovo's 22in high-resolution LCD delivers plenty of punch.

While thin might be in, Lenovo eschews this with what looks to be a very chunky LCD. However, the L220x delivers excellent image quality and performance despite its utilitarian profile.

There are connections to both D-Sub and DVI-D connectors and support for 1,920 x 1,200 — higher than the usual 1,680 x 1,050 you find at this size. It's capable of full 1080p with HDCP. You can use both the analogue and digital

connections simultaneously and toggle between them should you want to use the L220x with two systems.

In order to help reduce desktop clutter, the L220x has four USB ports — two at the back and two on the left side of the bezel. There's a cover on the main assembly that can be used for hiding cables so that the inevitable bird's

nest can be, at least, partially hidden. There are no integrated speakers on this unit.

Setup was straightforward, images looked excellent and text displayed clearly. There was no evidence of bright or dull spots, indicating that the backlighting was even. It had the best result for displaying arcs and diagonals of any screen we've recently tested. We found jaggedness was almost non-existent.

If you like to mix a little pleasure with your business, the L220x did a great job on DVD playback. Action sequences were rendered perfectly with no noticeable blurring.

Vertical adjustment allows the display to be raised by up to 110mm from its original height.

The screen can be rotated from left to right and tilted by up to 30 degrees. In other words, getting it in the right place for most people should be a breeze. In addition, the display can be rotated 90 degrees from landscape to portrait orientation. If you mainly work with documents this is a great way to get a full page on the screen in the correct orientation.

What didn't we like about the L220x? Well, the chunky shape doesn't scream 'modern office', but that's more than compensated for by the excellent image quality and performance. The high-resolution display is market-leading at this size, but so is the price with little change out of \$1,000 for a 22in display.

Anthony Caruana

CONTACT	Lenovo
ONLINE	www.lenovo.com.au
MARKET	Everyone
PRICE	\$998

✓	High res; performance; solid build.
✗	Chunky.

8/10





Apple Time Capsule

It's easy to use, but does that simplicity come at the price of reduced flexibility?

It's hard to know where to categorise Apple's Time Capsule. It combines a 3-port gigabit router, USB file and print server, dual-band wireless access point and 1TB NAS appliance. For many home users, the Time Capsule will be the only device they'll need to manage their connectivity and shared data storage.

The Time Capsule is primarily designed for Mac users wanting to take advantage of Time Machine, OS X Leopard's fully automatic

CONTACT Apple
ONLINE www.apple.com.au
MARKET Everyone
PRICE \$699 (500GB \$429)

✓ Easy setup; router, NAS and WAP; quiet.

✗ No RAID; no backup software; runs hot.

7/10

backup system. Windows users can access the hard disk within the Time Capsule just like any other NAS, although they will need to install Apple's Bonjour software to do this.

Wireless connectivity supports 802.11, b, g and n and both the 2.4GHz and 5GHz frequencies. The 5GHz frequency support (also found

in Macs that support draft 802.11n) is a big advantage over other manufacturers' wireless gear. Most manufacturers only support the 2.4GHz frequency, which is crowded with microwaves, cordless phones and umpteen wireless access points in it. The 5GHz frequency is little used, and has 23 non-overlapping radio channels, compared to 802.11g's three.

In our testing we found that the Time Capsule had good wireless range. We maintained a connection at over 20 metres of distance through walls within a house.

Given that there are no external antennas this is quite a feat.

The USB port offers great flexibility. We connected a USB hub and then piggy-backed a couple of USB hard drives and a printer. Our Mac could see all the devices as regular network devices. The same went with Windows, although printer setup requires using the Bonjour Printer Wizard.

Still, with only one hard disk and no RAID or other redundancy, your data has only limited protection. Also, if the drive fails you'll lose your router as well as NAS. Plus, the lack of traffic prioritisation and filtering might make business users think twice. If you're running VoIP and suffer some sort of connection constraint, there's no way to give VoIP priority so that call quality isn't compromised — a rather surprising oversight for a very capable router.

Anthony Caruana



Synology Cube Station CS407

An easy-to-use and robust NAS, but there are a couple of minor misses.

Compared to other four-bay NAS units, Synology's takes a different approach: the CS407 looks more like a storage appliance that you set up and forget about.

Disk installation is more complex than with most of the NAS units we see, and there's no hot swapping of disks, but setting up the unit was straightforward.

The accompanying CD guides you through plugging the power and LAN cables in and then hitting the power button. It then searches your LAN for a Synology unit. There are both Windows and Mac versions of the software. Linux users should also be OK. Providing they can log into their router and determine the unit's IP address, they'll be able to configure the CS407 via a browser.

Our unit was detected in about five seconds on the first attempt. It shipped with four 240GB SATA drives configured as a RAID 5 array, giving a total available storage of just over 680GB. Performance-wise, we were very satisfied. File copies were speedy and we were able to play the same movie concurrently on two machines. Skipping ahead to different parts of the movie on each system didn't cause any problems. However, we found it was a little too noisy.

As well as data storage and sharing, the CS407 boasts a couple of USB 2.0 ports for printer-sharing and piggy-backing another hard disk. It also boasts UPnP support for a huge array of audio and video codecs and can be used as an

iTunes server. It packs a BitTorrent client and can be used as an automated download system so that it can download and store files automatically. You can set the CS407 to only download at specific times so you can take advantage of off-peak allowances if your ISP offers them.

Although the Synology CS407 lacks a couple of features we've seen in other NAS units, such as hot-swappable functionality and plug-and-play installation, it's easy to set up and use. For small offices it's a robust storage solution, and at home it's great for media sharing.

Anthony Caruana

CONTACT Synology
ONLINE www.synology.com
MARKET Everyone
PRICE \$950

✓ Great performance; UPnP support.

✗ Complex disk install; no hot-swapping option.

7/10



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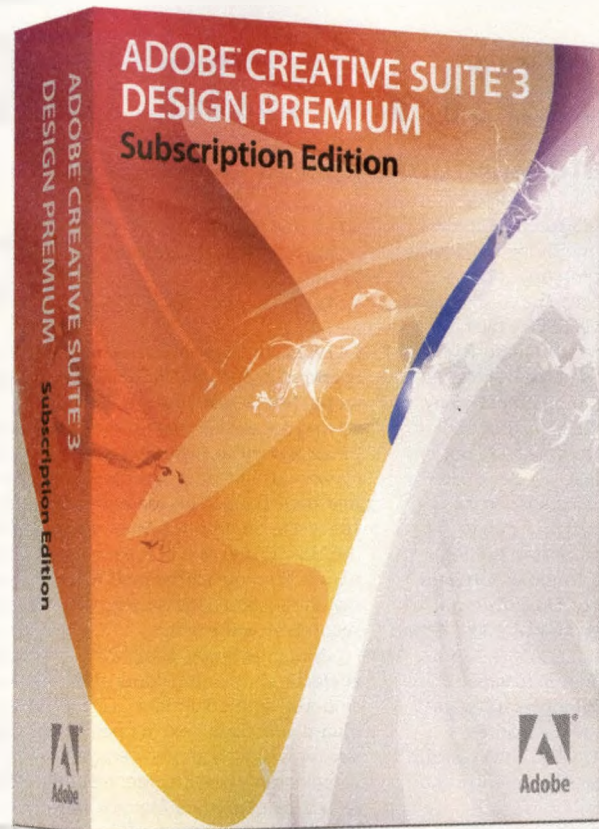


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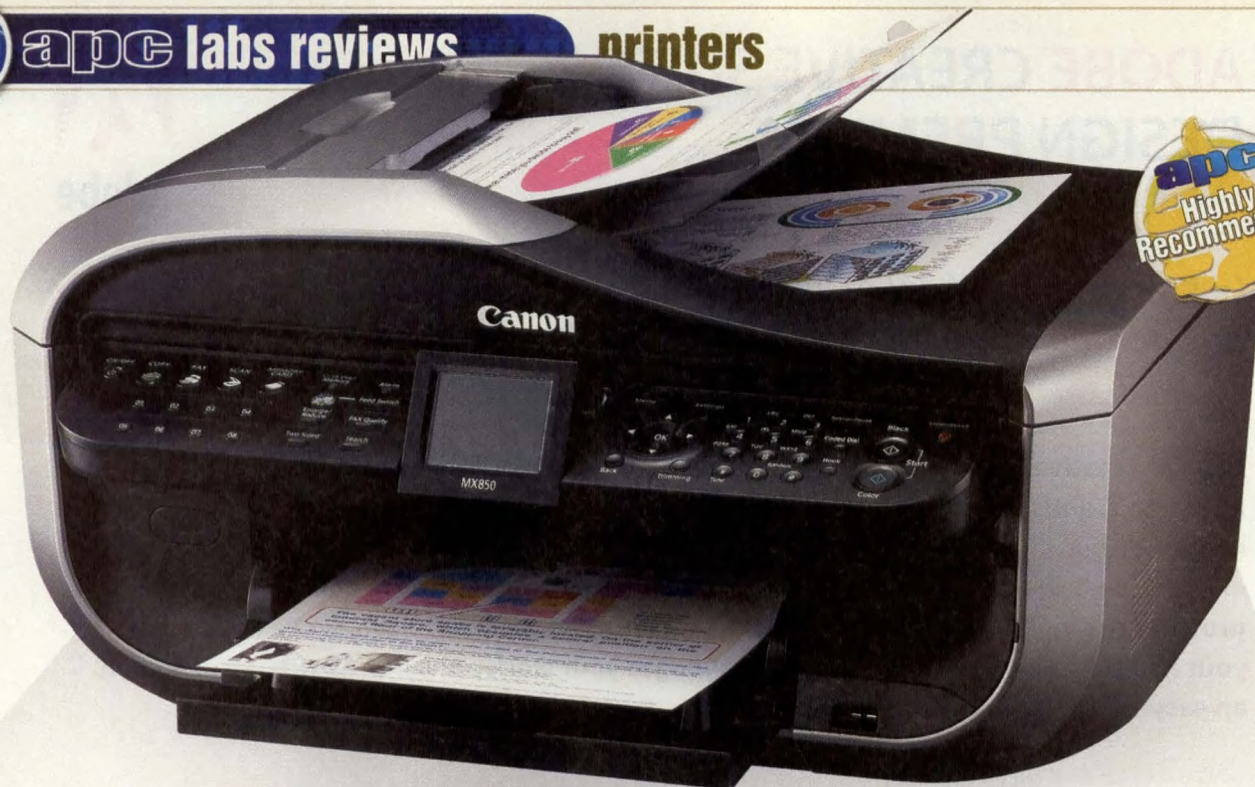
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Canon Pixma MX850

This Pixma's a real crowd-pleaser, apart from its Mac faxing inability.

Full-featured multifunction capabilities for the business set.

The MX850 is an A4 colour inkjet multifunction device with print, scan, copy and fax capabilities. It can be connected to a computer via USB, or over an Ethernet network. Measuring 51 x 48 x 26cm, its charcoal and silver finish would complement many current PCs. At 2.5in, the LCD screen is on the small side but bright and clear.

Setup and installation is straightforward (there's a convenient quick start guide), although the Windows software does span two CDs. Drivers are provided for Windows 2000, XP and Vista, and Mac OS X 10.3.9 and greater. In addition to various utilities, the Windows software bundle includes ScanSoft's OmniPage SE (OCR) and Presto! Page Manager (document management).

Paper capacity is a nominal 300 sheets, and the provision of a cassette at the base of the printer as well as the conventional rear tray means two different types of media can be kept loaded, with selection via software or a button on the front panel. There's also provision for printing on CDs and DVDs.

Nominal print speed is 31ppm

• **CONTACT** Canon
• **ONLINE** www.canon.com.au
• **MARKET** SMB
• **PRICE** \$449

for mono and 24ppm for colour. We recorded 21 seconds click-to-drop for the first colour A4 page, with the second page emerging in another 25 seconds or so, including a mysterious but fairly consistent mid-page pause. This seemed to be specific to our test document and the MX850; we haven't seen this before. Printing a different PDF file saw the second page emerge 14 seconds after the first.

Print quality was good, with characters appearing dense and smoothly formed under a magnifying glass. Text in small point sizes was slightly above average when compared with other recently tested inkjet printers. Margins were between three and five millimetres, though the MX850 is also capable of borderless printing (not recommended on plain paper).

Business graphics were bright with smooth gradients, although the reds seemed slightly subdued and the greens a little brighter than with other printers we have tested recently. Solid black areas appeared

✓ Full MFD including fax; good photo printing.

✗ Incoming faxes must print; no Mac faxing.

8
10

over-inked on plain paper and took longer than usual to dry.

Duplex capability is always welcome as a paper-saving measure, though show-through is more noticeable on inkjet printers than with lasers. Our test set of photos printed well, even at a large scale, with pleasing flesh tones and smooth gradients. We recorded a click-to-drop time of 70 seconds for the first 6 x 4in print. The MX850 uses Canon's ChromaLife 100 five-ink (CMYK dye, plus pigment black) system, and we've always been partial to the results this gives.

The device can also be used for standalone printing from the usual range of memory cards including CF, xD, SD, SDHC, Memory Stick and MMC. As with earlier Canon MFDs, there's the option of printing an index sheet that can be marked up and scanned to produce the desired selection and quantity of prints.

PictBridge-compatible devices can be connected via the secondary USB port for direct printing, but it seems this does not extend to USB

storage devices such as thumb drives. There is also an optional Bluetooth interface (not tested) for printing from phones and other devices.

The MX850 works much like a typical fax machine for sending and receiving, but there's also the option of sending faxes via a network or USB connection from Windows but not from Mac OS X.

Copying business documents gave good results. While the result of copying our test A4 colour photo was nothing less than satisfactory, the sky tones were slightly more accurately rendered on plain paper than on Canon's Photo Paper Plus Glossy paper, while the reverse was true for foliage shades.

Scanning gave good-quality images, and like other Canon MFDs, the MX850 makes it easy to direct a scan to a particular computer on the network on a pull or push basis.

If photo output is important, the MX850 makes a desirable MFD for the SMB market, or for a small group of users in a larger organisation. Our main objections are the inability to route incoming faxes to a computer and the absence of Mac-based faxing.

Stephen Withers

Oki C5950dn

High-end workgroup printing.

The C5950dn is a colour LED printer capable of 600 x 1,200dpi, with 10/100M Ethernet, USB 2.0 and parallel interfaces as standard. It uses four separate image drums and toner cartridges. Measuring 43 x 62 x 33cm, it's a fairly typical size for a workgroup colour printer.

The software comes on two CDs, with documentation on a third. Windows driver installation (2000/XP/2003/Vista — including x64 versions) is simple enough and gives the option of PCL or PostScript drivers, or both. Several utilities are provided, everything from Color Swatch to Network Card Setup, but each must be installed individually. Mac OS X software is included, but we needed to visit Oki's web site for versions, including 10.5-compatible drivers.

The front panel LCD is backlit, but the limited UI means the web

interface is much more convenient once the initial network configuration is complete. The standard paper tray holds 300 sheets and features a convenient 'fuel gauge' to indicate how much paper is left. There is also a front flip-down multipurpose tray that holds a nominal 100 sheets, and a 530-sheet second tray can be added.

Nominal print speed is 26ppm for A4 colour, 32ppm for mono. We recorded 16 seconds click-to-drop for the first colour page, with the second page emerging consistent with the rated speed. Mono printing was slightly faster, with the first page dropping in 14 seconds.

Print quality was very good, with characters appearing smoothly formed even under a magnifying glass. An all-black page resulted in a slightly leathery appearance with some banding



CONTACT	IPL
ONLINE	www.oki.com.au
MARKET	SMB
PRICE	\$2,035

- ✓ Fast; flexible workgroup colour printing.
- ✗ Colour balance could be better.

7/10

and revealed non-printing margins of between 4 and 5mm on the various edges of A4 paper. Business graphics came out well (apart from the typical laser toner gloss effect), and while the C5950dn made a reasonable job of printing our test photos, they were on the red side and not as pleasing as those produced by the C8800n.

Like most laser printers in its class, the C5950dn is fairly noisy when operating and idling until it drops down into low-power mode. While you wouldn't want it right next to your desk, it would make a decent workgroup printer with its 60,000 pages per month duty cycle.

Stephen Withers

Brother QL-570

Effective label-printing in small batches.

The QL-570 is a small yet flexible label printer. Measuring just 14 x 20 x 14cm, it takes up less desk space than a mouse pad.

Setup and installation is

typically straightforward, with a step-by-step guide booklet. A single CD contains software and drivers for Windows 2000, XP and Vista, and from Mac OS X 10.3.9.

Like earlier devices of this kind that we've used, the QL-570

takes rolls of special labels. Each roll comes on a plastic carrier that snaps into place under the top cover, which — along with the self-aligning mechanism — makes it easy to change labels. The printer comes with 100 29 x 90mm address labels and an 8m roll of 62mm

wide continuous tape, both in white paper. The labels themselves are durable. The film is naturally more robust than paper, and seems even less vulnerable to marking when friction activates the thermal process.

The QL-570 can be used from applications like any other printer: select it from the available devices, pick the label size you're using, then adjust the paper size, orientations and margins appropriately. But for many purposes, it's simpler to use the bundled P-Touch Editor. Combined with the supplied add-ins for Word, Excel and Outlook, it removes a lot of the fiddling around. Snap mode can be particularly useful, while Express and Professional modes provide

increasing flexibility and control over the design.

Nominal print speed is 68 labels per minute for four lines on 29 x 90mm address labels. We printed 10 such labels in 12 seconds, cutting only at the end of the job. Quite frankly, this seems fast enough for the relatively small batches typically produced on such devices. The default 300 x 300dpi setting is to our eyes adequate for most uses, especially address labels.

Substantial address label runs are probably best done on a laser or inkjet printer, but if you often need to produce small numbers of labels — even one at a time — the QL-570 is a convenient and flexible way of doing the job.

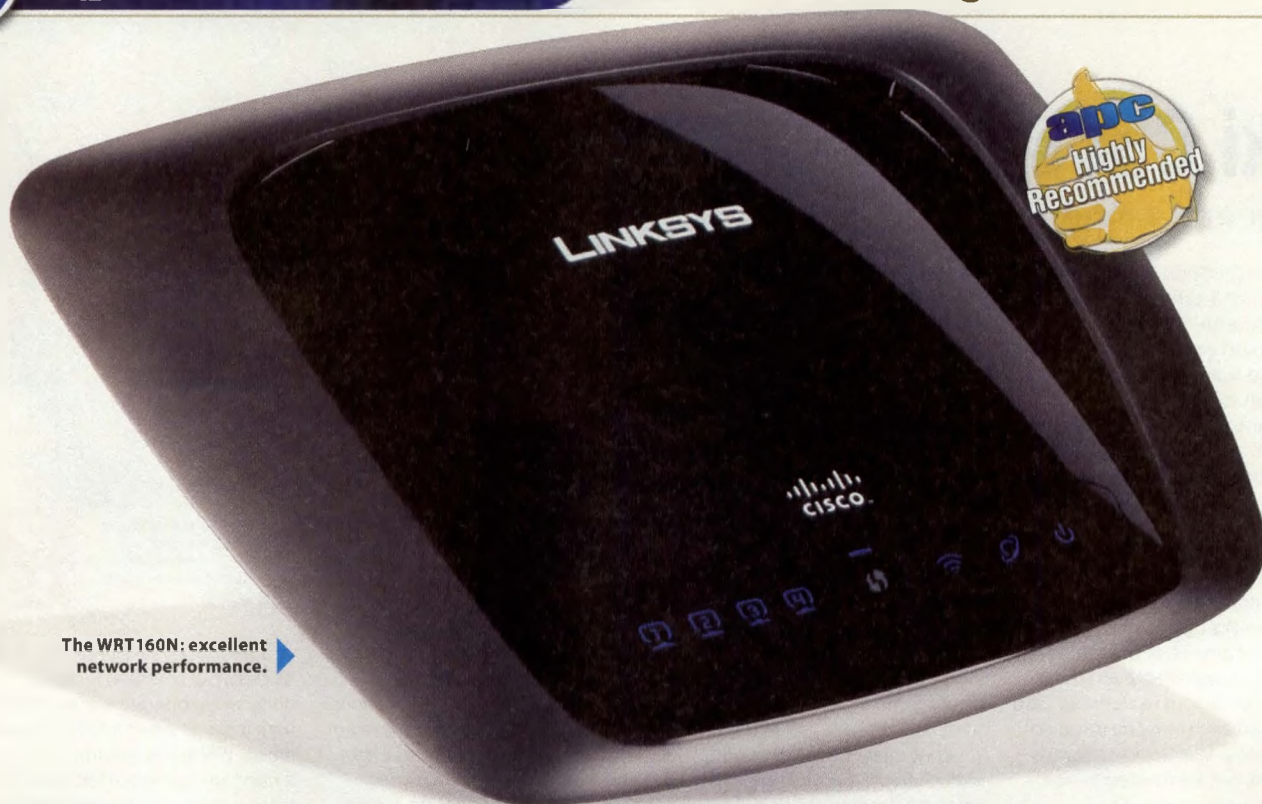
Stephen Withers

CONTACT	Brother
ONLINE	www.brother.com.au
MARKET	Everyone
PRICE	\$149

- ✓ Quick and easy label printing.
- ✗ Black print only.

8/10





The WRT160N: excellent network performance. ▶

Linksys WRT160N Wireless Router

Looks more like a sports car than a network appliance.

We remember the days when routers looked like network gear — boring boxes with a few blinking lights and some ports for connecting devices. The Linksys WRT160N dispels those stereotypes with a space-age look that makes it look more like a model sports car than a router.

Installation and setup has been designed with home users, rather than network gurus, in mind. The ports on the back are coloured and the user manual, provided on the installation CD, was easy to read. There was little network jargon and where it was used there were clear plain-English explanations provided. Wireless protection options are labelled as best, good and none and once configuration is complete the settings are saved as a text file that can be printed for later reference.

Out of the box, all the ports on the WRT160N were covered with a 'Run CD first' sticker. We did that and, rather than the usual web browser installation process, Linksys provides a great tool called the

CONTACT	Linksys
ONLINE	www.linksys.com.au
MARKET	Everyone
PRICE	\$169

Linksys EasyLink Advisor, or LELA. LELA is a graphical application that gives you a picture of all the devices connected to your network. This sort of software has typically been in the domain of professional network managers. However, if you've become the accidental manager of a small network at home or in the office then LELA is a Godsend. It's currently Windows only but we're told that a Mac version will be coming later this year.

Other than the funky casing, the WRT160N is a fairly standard router. There are four 10/100 ethernet ports, 802.11n on the 2.4MHz frequency and a port for connecting your internet connection. We spoke to Graeme Reardon, the Regional Director for Linksys, and asked him why Gigabit hasn't been included. Simply, the cost of Gigabit router hardware still hasn't been

✓ LELA software; easy to set up.

✗ No Gigabit; no dual-band wireless.

8/10

commoditised to a point where it can be provided at the current pricing. That will change in the next 12-18 months.

Network performance was excellent. Wireless range, tested with a Toshiba Portege R500 and Apple MacBook Pro was excellent. Within our office, the signal strength remained at its maximum. Taking our laptops for a walk, the signal didn't drop to the 'Poor' level until we'd put about 25 metres and a couple of brick walls between the laptops and the router.

What really grabbed us was LELA. When we attempted to connect to another wireless LAN, LELA stepped in to guide us through the process.

When someone tried to connect to our LAN, LELA provided an alert. If the internet connection was down, LELA provided a visual cue as to where the problem was and ran

through a wizard to repair the issue. The repair wizard was able to repair basic issues but struggled with a complex IP address routing issue which, to be fair, would probably not occur in a real-world situation. We had the WRT160N connected to a router that was, in turn, connected to another router.

What was missing from the WRT160N? We'd have liked to see Gigabit Ethernet but Linksys explained the reasons why it's not there to us. Also, the support for 802.11b/g/n will be adequate for many but the lack of support for 802.11a and the 5GHz frequency is a deficiency. There's no USB port for sharing a printer or storage device either.

Overall, the Linksys WRT160N is a competent router that's accompanied by some excellent software. LELA is an excellent value-add. If a later version of the hardware includes Gigabit and dual-band wireless it'll be a killer home or small office router.

Anthony Caruana

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LG PG60 series

Life really is good with this larger-than-life plasma.

Keeping up with the Jones's: at this price point, it won't be too hard.

LG makes a bold statement with its latest HDTV, the PG60. It's the first plasma we've seen that uses a single-layered technology, and the result is a stunning frameless television with a display that looks larger than it actually is. Continuing on with the minimalist theme, the speakers are completely hidden inside the cabinet. Buttons on the front for switching inputs and changing the channel and volume are tucked away on the underside below the power button.

One feature we don't see enough of in HDTVs is a swivel stand, which is handy for connecting components without having to move the whole TV. The PG60's stand can turn 20 degrees on either side: ample room for getting to the inputs on the left-hand side and rear. On the left, it has a USB port, HDMI, composite and S-Video. This is joined by another three HDMI inputs, two component, one composite and a D-Sub port on the rear. Interestingly, the PG60 includes a composite AV out port for hooking up a second television or monitor,

although we couldn't think of a scenario where this would be handy. Oddly, there's no headphone jack for private watching.

The pixel resolution of 1,024 x 768 means the 42in PG60 isn't full HD, but it still delivers an outstanding performance for high-definition pictures. Our Blu-ray copy of *Pirates of the Caribbean: Dead Man's Chest* looked amazing, with remarkable clarity and superb black levels. It's worth noting that we had to turn the sharpness and contrast levels up while calibrating the PG60 to get a good picture — most HDTVs need to have those settings turned all the way down. Colours are exceptionally vivid, but they tend towards over-saturation.

The PG60 boasts a high 30,000:1 contrast ratio, and this results in a lot of detail and depth — especially in dark and high-contrast scenes. The numbers don't necessarily tell the whole story, though. The

Pioneer KURO LX508A, which won our recent HTDV Labs Challenge, had a lower 20,000:1 contrast ratio but looked considerably better. Still, that TV is four times more expensive and considered to be the best HDTV currently available. Compared to other HDTVs that sell for double the PG60's asking price, its high-definition performance is actually better than some units we've tested.

Standard definition is similarly excellent, provided you turn the sharpness down. It's a common misconception that HDTVs play everything better, but the lower resolution of DVD and SD TV have to be upscaled to fit the entire display area — usually resulting in a lot of noise and fuzziness. This isn't a problem for the PG60 — DVDs play back very smoothly and cleanly, so you won't be missing your old CRT television any time soon.

One problem we encountered when using the PG60 is ghosting,

which is where a high-contrast image is temporarily burned into the display and visible after the image isn't on-screen anymore. This fades after a few minutes, but it's disconcerting — especially for gaming, where high-contrast images are regularly followed by plain backgrounds and the ghosting can be seen quite clearly.

Although the speakers are hidden inside the TV cabinet, sound on the PG60 doesn't suffer for it. LG has also done some work on the menu interface, and the PG60's is one of the most attractive we've seen. The top-level menu is easy to navigate through and the PG60 also offers a quick menu for changing commonly-used settings like picture mode, sound mode and aspect ratio.

The PG60 is very competitively priced and, at this price point, bargain hunters won't find anything better. But even those with more cash to spend should give the PG60 serious consideration for its excellent picture quality and sexy hardware design.

Jenneth Orantia



✓ Incredible value; excellent picture.
✗ Ghosting problem; no headphone jack.

CONTACT LG
ONLINE www.lge.com.au
MARKET Everyone
PRICE \$1,799



Pioneer BDP-LX70A

If you can swallow the price tag, Pioneer's second-gen Blu-ray player has got it where it counts.

Blu-ray for the aristocrat.

The Pioneer BDP-LX70A is a top-of-the-range Blu-ray player which handles most CD, DVD and Blu-ray formats as well as being able to play streamed media content from Windows Media Servers. This is Pioneer's second-generation player, with a few enhancements over its predecessor including support for BD-R (Blu-ray writeable) and BD-RE (Blu-ray rewriteable) discs, DTS-HD Master Audio and a significant price drop.

The LX70A certainly looks the part and would be a pleasant addition to any home theatre system. Although larger than most DVD players, the unit is well designed with a stylish front panel and centre indent that avoids the box look. There are two large silver buttons on the front of the unit for power and playback as well as smaller buttons that control basic playback functions and output resolution. The LED display is large and easy to read without being too bright, and of course there is the ubiquitous blue lighting that indicates when the player is on, although there is no standby light.

CONTACT Pioneer Australia
ONLINE www.pioneer.com.au
MARKET Everyone
PRICE \$1,799

✓ Built in streaming media player; audio.
✗ Price; no support for BD-Live.

8/10

The remote is large, which allows for the buttons to be well spread, however some may find the remote a bit chunky and uncomfortable in the hand. It would have been nice if the remote had some backlighting to allow it to be easily used in a dark theatre room.

Everything you need is supplied in the box — including remote batteries and an HDMI cable. Setup was extremely easy using HDMI, with the unit immediately detecting the maximum output resolution of our test panel. The LX70A supports HDMI 1.3, which allows for eight channels of uncompressed audio as well as 1,920 x 1,080 progressive HD video. If your panel supports it, the unit can output 24p for true cinematic playback, otherwise it will convert the video to 60p or 60i.

The LX70A provides outstanding audio with support for Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio, DTS-HD Audio, Dolby

Digital and DTS if using HDMI or digital outputs. If your receiver does not support these formats, the player will output Dolby Digital or DTS, stereo PCM (via optical or coax digital outputs) or 5.1 analogue. An analogue stereo downmix is also available.

The best video quality is obtained through HDMI; however, the LX70A does support 1080i via component or standard definition through S-Video and composite.

The unit takes around a minute to power up and 40 seconds or so to load a disc. Once the disc is loaded, the LX70A is very responsive. Most Blu-ray Profile 1 discs (but not BD-Live) including BD-R and BD-RE are supported, which allows you to play back your own movies if authored properly. DVD support is reasonable although DVD+R/RW and DVD-RAM aren't supported; nor is there support for high-definition DVD formats such as AVCHD or DivX.

As expected, Blu-ray picture quality is excellent, although we did notice that DVD resolution upscaling was variable, with some frames extremely sharp and others less so (however this could have been the way the DVD was originally encoded).

We were quite excited when we saw the Ethernet port on the back of the unit and initially hoped this would support BD-Live. However, the Ethernet port is only used to connect to Microsoft streaming media servers and cannot be used to download content or Java apps from the internet. The range of supported media formats is Microsoft-biased and includes WMV 9, MPEG-1 & 2, MP3, AVI and WMA with noticeable exceptions being lack of support for MPEG-4, OGG or FLV.

Overall, this unit is excellent if you have a current-model display panel and a top surround sound receiver to take full advantage of 24p video and high resolution audio. The inbuilt streaming media player is also a nice bonus.

David Neiger



Popcorn Hour A-100

BitTorrent in the lounge room?
We're not quite there yet, my friends...

Great for tech heads, but probably not for everyone just yet.

To be fair, streaming media technology is still in its infancy, which means that you need to accept that things won't work flawlessly until the technology matures. That said, the Popcorn Hour A-100 could be considered a toddler. Most of the time it does what it's told, but you have to put up with the sulks and tantrums!

The Popcorn Hour A-100 is a fancy name for a network media tank, in other words a device that allows you to stream and watch video from the internet, media server, local hard disk or removable storage. As a bonus you can also listen to audio and view photos.

Currently the A-100 is only available in Australia via mail order from the Popcorn Hour web site. The A-100 ships with the grey metal unit itself, remote control, batteries, power supply and a US plug cord (which can be replaced with any PC power cord). Best of all, an HDMI

• **CONTACT** Syabas Technology
• **ONLINE** www.popcornhour.com
• **MARKET** Everyone
• **PRICE** US\$179 (+ US\$45 shipping)

✓ Supports high-def and most video formats.
✗ Documentation lacking; performance.

7/10

cable is included so you can enjoy high definition straight out of the box.

The unit will work as it is, but for additional functionality, you can easily add an ATA hard disk to enable media server functionality, BitTorrent and local storage. The front has a remote sensor, indicator lights and two USB ports to allow you to connect USB memory drives, DVD drives, USB hard disks or a keyboard. The back has an Ethernet port, HDMI 1.1 connector, stereo analogue audio, SPDIF (coax), component, composite and S-Video.

As expected with cutting-edge technology, installation had its own challenges, since the unit does not negotiate the HDMI setting but rather goes for the default of NTSC 480p. After unplugging the HDMI

connection we were able to finally get to the setup screen using the composite analogue output, although we later found that you could access the display page via a browser interface from your computer.

Support for DVD movies is limited, since the unit cannot play back any CSS (commercial) DVDs due to a limitation of the chipset, whilst you can play unprotected DVDs and DVD images.

Support for streaming media, however, is good, as most compressed formats are supported.

If you are into BitTorrent and you install an internal hard disk, the A-100 can act as a torrent client by simply pointing it to a torrent file on the network or USB drive.

Network performance is mediocre with the BitTorrent client;

considerably slower than PC equivalents. Uploading movies to the internal hard disk is also painful since FTP is very slow (around 2MB/s). A better option is to use NFS (Unix) shares or to set up a media server on your PC.

Although nearly ready for the mainstream, the A-100 is not quite there yet. The interface is good, and when the unit works it works well. The trouble is that from time to time it throws tantrums and either locks up or does strange things, particularly if the video file is not exactly to specifications.

Provided you accept the Popcorn Hour A-100 is a product in development — and you will experience glitches and frustration — it is nevertheless one of the best devices we have reviewed for watching streaming video and downloading video from the internet. Unfortunately it is not yet as reliable as a DVD player, nor as easy to use.

David Neiger

Pinnacle PCTV Nano Stick 73E

High-def digital TV — if you want it badly enough.

The Pinnacle PCTV Nano Stick 73E is Pinnacle's latest USB digital high-definition tuner card. In a stick about half the size of a packet of chewing gum, Pinnacle has managed to pack a high-definition tuner, an in-built signal amplifier to improve reception sensitivity and a remote control sensor.

Installation should be a simple affair but, in practice, digital TV reception isn't always straightforward. If you live in a perfect signal area, the supplied antenna should work, however, when we tested the unit in our offices, the antenna failed to bring in any stations.

We connected the stick to our rooftop antenna and managed to find all stations except for Ten Digital. This is where the lack of documentation became frustrating, forcing a visit to the Pinnacle web

site in order to search the support forums. It took some playing around with software to find a switch to disable the inbuilt amplifier, which then allowed all channels to be received.

The tiny remote is very cute but in our view too small, as it does not fit comfortably in the hand and it would be a challenge to press the correct button in a dark home theatre room.

The stick ships with BDA drivers so you could use it directly with Windows Media Centre or Vista. As well as the drivers, the software CDs contain TVCentre and a cut-down version of Pinnacle's consumer editing software. The editing software is essentially



demoware, as you need to purchase a key in order to edit MPEG video after the 15-day trial. TVCentre, on the other hand is reasonably good although it requires registration in order to unlock its full functionality. Like most PVR-type software, TVCentre allows you to watch and

record TV, time-shift, program and play back recordings. Unfortunately, we found the TVCentre software to be unstable — but a software update is available on the Pinnacle web site, which should address these issues. Provided you live in a good signal area or are prepared to attach the stick to an external antenna, you should be able to obtain many hours of viewing pleasure. The stick is small enough to take anywhere, and the supplied software (once the stability issues are sorted) is better than most.

David Neiger

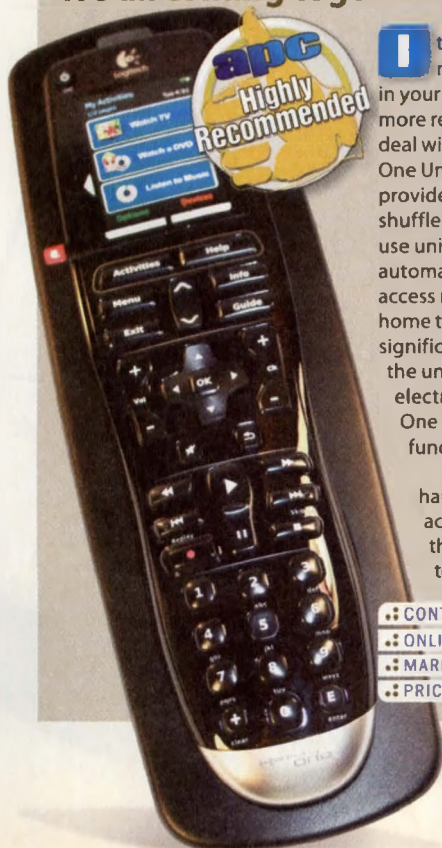
CONTACT	Lako Pacific
ONLINE	www.lako.com.au
MARKET	Everyone
PRICE	\$99.95

- ✓ Small; versatile software.
- ✗ Difficulty receiving some channels.



Logitech Harmony One Universal Remote

It's all coming together — if you're willing to roll up your sleeves.



It is a sad fact of life that the more components you have in your home theatre system, the more remote controls you have to deal with. The Logitech Harmony One Universal Remote aims to provide a solution to the remote shuffle by combining an easy-to-use universal remote with basic automation so that you can easily access most functions of your home theatre system. Although significantly more expensive than the universal remotes available at electronic stores, the Harmony One offers considerably more functionality.

The control fits well in the hand and has large easy-to-access buttons. At the top of the control is a colour LCD touch screen that provides

access to additional functions and activities. The backlight function is bright enough to be able to comfortably use the remote, even in a dark room.

The supplied software connects to the internet and accesses the comprehensive Logitech database to download the infra-red commands to the remote control.

To use basic remote control functions you simply access the component you want to control from the touch screen and use the buttons for channel selection, volume and playback functions. If, however, you want to access the full functionality of your component, you can do so by touching 'soft' buttons that appear on the LCD touch screen. This allows you to effectively do away

with the manufacturer's remote because (in theory) every function is accessible via the touch screen.

If you are prepared to spend the time to set it up, the Harmony One also provides automation functions that allow you to send sequences of commands to your components at the touch of a button.

If you put in the effort, you will be rewarded with a remote that can control up to 15 individual devices at the push of a button. No doubt some people will spend hours programming the Harmony One so that everything works properly either to do away with multiple remotes or for the simple cool factor.

The question is whether it is worth the money and effort? If it is, then the Harmony One may just be the device you have been looking for.

David Neiger

CONTACT	Logitech Australia
ONLINE	www.logitech.com
MARKET	Everyone
PRICE	\$399.95

- ✓ Eliminates the need for multiple remotes.
- ✗ Tedious to set up.





HTC Touch Cruise

It's no supermodel, but it comes close.

The latest update to HTC's Touch range is the Cruise, a Windows Mobile 6 Professional smartphone that gets its name from an on-board GPS chip (and not a certain wacky scientist, alas). It doesn't add anything we haven't seen before in HTC's lineup, but marries the GPS, Wi-Fi and 2.8in screen of the TyTN II with the sleek form factor and TouchFLO interface of the Touch Dual. Unlike either unit, however, it doesn't have a slide-out keypad.

The Cruise isn't quite as good-looking as the Touch Dual, but it's still attractive for a smartphone, with a mirrored chrome front, soft-touch black finish and unique shape that's both angular and curvy. Characteristic of the Touch range, it's slim and compact, and its 2.8in display (which has the standard QVGA resolution) is flush with the casing.

The usual answer and end-call buttons are below the screen, as well as launch buttons for CoPilot Live 7 and Internet Explorer, and two buttons that correspond to on-screen soft keys. Navigation takes place by tapping on the touchscreen with the included stylus (or your finger) and the mechanical scrollwheel. Unlike other HTC smartphones, it doesn't come with dedicated OK and Start menu buttons, which simply means more on-screen tapping. Two cameras are on-board: a front-facing VGA one for video calls and self-portraits and a three-megapixel one on the rear that includes autofocus but no flash.

Running the show is a 400MHz Qualcomm MSM7200 processor, and for the most part performance was snappy, although a tougher-than-usual glass overlay means the screen isn't as sensitive as we're accustomed to. Like the TyTN II, the Touch Cruise uses CoPilot Live 7 for mapping — an application that costs a couple of hundred dollars

when bought separately. This program does a great job at making the most of the limited screen real estate, with large buttons, predictive address matching (so you don't have to enter the whole address), and turn-by-turn voice guidance. Features typically found in standalone GPS navigators are all on-board, and it integrates with the Cruise's phone and PIM functions, offering click-through numbers for points of interest, address lookup for Outlook contacts, and the ability to send your current location, ETA and destination using SMS.

A feature found in all Touch smartphones is the 3D cube launcher, providing quick access to multimedia, contacts represented by photo thumbnails, and commonly used applications. HTC throws in a few other programs and GUI enhancements that make it easier to use the device one-handed, but for writing email, web browsing and adding meetings and contacts, the interface is still classic Windows Mobile, which means tapping on lots of small buttons and ample use of the stylus. Also, as it doesn't have a physical keypad, you have to use the on-screen software input methods, ranging from handwriting recognition (slow and error-prone) to predictive text (difficult-to-use) and a QWERTY keyboard (effective but with tiny keys).

Windows Mobile 6 Professional is well-stocked when it comes to software, but HTC throws a few more goodies in the bag. The HTC Home plug-in for the Today screen is infinitely superior to anything

we've seen from other Windows Mobile vendors, with a tabbed info panel that shows the time and phone information, weather forecast, customisable program shortcuts and a profile switcher. The Task Manager applet adds a 'real' close button to the taskbar, and Audio Manager, Camera Album and Opera Mobile 8.5 are better versions of the equivalent Windows Mobile.

One thing the Cruise doesn't lack

is wireless connectivity. It offers quad-band GSM/GPRS/EDGE, as well as 3G, HSDPA, 802.11b/g Wi-Fi and Bluetooth 2.1+EDR. Internal storage is 256MB, and while the bundled 512MB microSD card is skimpy, the Cruise supports high capacity cards like SanDisk's 8GB microSDHC card. Battery life is quoted as up to four hours talk time and 450 hours of standby over 3G.

Jenneth Orantia



It might not look quite as schmick as the Touch Dual, but it's what under the hood that counts.

• CONTACT HTC
• ONLINE www.htc.com/asia
• MARKET Everyone
• PRICE \$1,149

✓ Extremely capable; feature set; compact.

✗ Entering text is fiddly.

8
10

Cowon A3

Excellent, with a few drawbacks.

IPods may have a monopoly in the portable media market, but their feature sets and sound quality have always been 'good enough' rather than spectacular. In this sense, the Cowon A3 is the iPod's antithesis. It's chunky, and its menu system could best be described as functional, but it has a features list an arm long and its multimedia playback is simply phenomenal.

Measuring 133 x 78.5 x 22mm, the A3 isn't really a device for casual media consumption, but if you're going on holiday and need a way to amuse yourself for several hours, it makes for an excellent travel companion. The 60GB hard drive is small for a device this size, but it's

enough to fit nine full length movies and several hours worth of music.

Portable media players can usually play a handful of different audio and video codecs, but the Cowon supports nearly every file format. This includes the usual suspects like MP3, WMA, AAC, WMV and MPEG-4-SP, and extends to lossless audio formats like FLAC and True Audio, as well as DivX, MKV and unencrypted VOB (the format used by DVDs).

We were blown away by the quality of playback. Music sounded clearer, fuller and richer than on any other digital audio player we've tested, with throbbing bass and excellent treble. Video was

also outstanding, akin to that of a tiny LCD TV. Display resolution on the four-inch screen is 800 x 480, but it can downscale videos up to 1,280 x 720 in size.

Unfortunately, the speaker on the A3 is weak — even for personal listening — so you're best off using the 3.5mm headphone jack or connecting it to a stereo. The A3 is well-equipped for external connections, with support for composite, S-Video and component output using the supplied cables. You can also set the A3 to record

recording for a later date and record audio directly from another source using the line-in port.

The A3's Achilles heel is battery life. In our testing we got 4 hours for video and the same for audio — even with the screen off. Worse, the battery isn't replaceable.

Jenneth Orantia



CONTACT	Toshiba
ONLINE	www.toshiba.com.au
MARKET	Everyone
PRICE	\$579

✓ Exceptional playback; lots of features.

✗ Poor battery life; bulky.

8/10

HTC Shift X9500

Cute and compact, but compromised.

HTC is a seasoned veteran when it comes to smartphones and PDAs, and it's this experience that's given the company a leg up on other

vendors. The Shift's compact footprint (almost identical to a DVD case) and 800g carry weight makes it ideal for mobile working. The touchscreen lets you use it as a slate or in standard notebook configuration. Native display resolution on the 7in screen is 800

x 480, but if a higher pixel count is needed, a button to the right of the screen switches resolution to 1,024 x 600. This isn't true 1,024 x 600 — it uses interpolation to artificially scale the resolution up.

One of the Shift's biggest selling points is its integrated keyboard. If you're expecting it to be notebook-sized, you're in for a disappointment — the keys are about a third the size. Another compromise is the limited number of ports on the Shift, comprising of a lone USB 2.0 port, VGA and an SD card slot, but it comes with a USB adapter that adds three USB, mini-USB and Ethernet ports. At least it's well-appointed for wireless connectivity, with 802.11b/g Wi-Fi, 3.6Mbit/s HSDPA connectivity and Bluetooth. Other features include a

VGA webcam, fingerprint reader and 40GB hard drive (21GB available storage).

Thankfully, HTC has configured the Shift with hardly any extra software, so there's minimal drain on the machine's limited resources. With an 800MHz Intel A110 processor and 1GB of RAM, the Shift is no speed demon, but it runs perfectly well with a couple of Word documents and browser windows open.

UMPCs aren't renowned for good battery life, but the Shift isn't too bad. Using a mix of word processing and web browsing over Wi-Fi, we got three hours of run-time. The battery is replaceable, so road warriors can carry a couple of spares for all-day battery life.

Jenneth Orantia



CONTACT	HTC
ONLINE	www.htc.com/asia
MARKET	Everyone
PRICE	\$1,999

✓ Versatile form factor; mobile broadband.

✗ Built-in ports limited; under-sized keyboard.

7/10



Nikon D60 DSLR

Nikon releases its smallest DSLR onto the market.

Continuing the tradition of delivering good-quality, entry-level DSLRs, Nikon has created a small but powerful camera that is set to replace the D40X. With essentially the same body as its predecessor, the same 10.2 megapixels (which seems to have become the de facto industry standard for entry-level DSLRs) and the same 2.5in LCD screen, you might wonder where this differs from the D40X — image stabilisation is the answer, and it's a very welcome feature at that.

An affordable stabilised kit lens package is available to aid in getting sharper photos while at long zoom lengths. The new Nikkor DX 18-55mm VR has been redesigned optically and allows you to handhold at shutter speeds three times slower than normal, while still offering quick and quiet focusing — which is impressive for a budget kit lens.

As with the D40X, the D60 has no inbuilt focus drive motor, so users will be forced to rely on specialist AF-S and AF-I lenses to allow auto focus modes to be used. An electronic rangefinder has been added to allow manual focusing on non-S and AF-I lenses.

The Nikon-created EXPEED image processor inside the D60 ensures high-quality image capture. With an ISO sensitivity of 100 — 1,600 and the possibility to compensate the sensitivity with one extra step to ISO 3,200, this range should prove adequate for any keen amateur. The auto-focus unit is Nikon's Multi-CAM 530 AF sensor module with TTL phase detection, a modest 3-point AF system that at first glance seems a little under-optimistic. Though not as impressive as the 11-point system of Nikon D80, the D60 still manages to focus on most given subjects quickly and easily, allowing for fast and accurate shooting.

Compared with the D40X, the shutter speed has remained the same, with speeds from 1/4,000 to 30 seconds. At three frames per second shooting speed, which is average for a DSLR in this price range, the D60 keeps pace with its main competitors, including Canon's 400D. With three metering modes: Spot, Centre-weighted and 3D Colour Matrix Metering II, the D60 also stands up to the competition in this area.

An updated Airflow Control System and anti-dust system is also included. Dust reduction has now become a desired feature and a necessity for any DSLR owner, (due

to constant lens changes). With the job of removing unwanted marks from the digital image, it prevents disappointments and a lot of editing in Photoshop afterwards. An additional novelty which until recently has only been seen in more expensive cameras is the eye-sensor which deactivates the LCD monitor as soon as the optical viewfinder is used. The camera detects when the user places their face up against the camera and turns off the LCD, both to save power and to remove the distracting glare of the LCD from the user's peripheral vision.

The Nikon D60 is equipped with both a pop-up flash and a hot shoe

adapter for external flashguns. This is a welcome addition that makes it possible to attach a Nikon Speedlight flash so as to increase your photographic possibilities. Built-in flashes have always been notoriously weak in all DSLRs regardless of price.

As low-end DSLRs go, the D60 is a viable alternative to other similarly priced cameras on the market. With all the most-wanted features that camera users yearn for, as well as high image quality, its small compact size and Nikon's quality reputation, the D60 is a good buy by any standards.

Christopher Zammit

CONTACT	Nikon
ONLINE	www.nikon.com.au
MARKET	Everyone
PRICE	\$1,299 (twin lens kit)

✓ Has got everything you could need.

✗ Not compatible with older Nikon lenses.

**8
10**



Nikon's D60: fast and accurate shooting, and now with advanced image stabilisation.

Fuji Finepix F100fd

Do you need so much in a compact?

The very first thing that struck me about the Finepix F100fd was that having 12 megapixels in a camera of this size was almost obscene compared to my Minolta DiMAGE 7i with its miserable five. The second was that the lettering and symbols on the chrome trimming for the on/off and zoom rocker lever was unreadable unless tilted 'just so' to make the angle of shadow and reflection correct. Plus, at a price tag of \$499, this is not at the cheaper end of the compact digital camera scale and yet it does not ship with a memory card (it accepts both xD and SD cards). Yes, there is 57MB of internal memory but with a camera capable of 4,224 x 2,816 in its finest mode, that is not going to last long. In testing, around 12 frames to be exact.

But there is good stuff too. I like the way when selecting a function that a description of it appears on

the excellent 2.7in LCD. And there is a very good range of functions too for those that want to go beyond happy snapping. For example, ISO ranges from 100 to 12,800 and there are no less than 18 program modes.

The self timer has a variable range, there's face detection, a grid can be overlayed on the LCD to give a more accurate rule of thirds line up and the lens is a fair dinkum Fujinon that is excellent, with a range of 3.3 to f5.1. Startup time is quite fast. The 5x zoom is adequate and the LCD is very clear, even in direct sunlight.

Power is obtained from a removable battery, and Fuji claims it is good for around 230 frames from the standard battery. Would I buy it? Probably not, but for no other reason than I don't like shelling out nearly five hundred big



CONTACT	Fuji
ONLINE	www.fujifilm.com.au
MARKET	Everyone
PRICE	\$499

- ✓ Menu; features; lens; LCD when outside.
- ✗ No SD card supplied; on/off button small.

9/10

ones to only find to make full use of it, I have spend more to get memory. That's a bit penny pinching on Fuji's part for me.

Technically, however, it is a very

good camera and ranks alongside equivalent units from Canon, who I consider the benchmark at this price point.

David Hague

JVC Everio GZ-HD6 Camcorder

High-end features and performance to be found in JVC's HDD-line refresh.

JVC's Everio range was arguably the first hard disk-based camcorder series on the market and, over the last two years or so, JVC has been quietly tuning its brand, culminating in the latest model, the GZ-HD6, which has a whopping 120GB drive inside it. Why so much? Because the GZ-H6 is also a full 1080p high-definition

camcorder with three 1/5in CCDs giving an effective pixel count of 2,140,000 — and it needs the room to store the 1,920 x 1,080 info hi-def requires. Earlier Everio models were not 'true' hi-def as they only output to 1,440 x 1,080.

I have criticised previous Everio models as I found they were quite badly let down in the image

stabilisation area. It appears the JVC engineers have been beaver away to solve this with, reportedly, a complete makeover of the software and hardware components making up the optical image stabilisation system.

I don't like the lateral rocker switches for zoom controls: pro cameras have used longitudinal zoom rockers forever almost, so why change a good thing? There is also no viewfinder, which in a camcorder of this level I find astonishing; on the plus side, though, the LCD screen is totally watchable even in full-on direct sunlight. Very impressive. Close-up work from the Fujinon lens is also excellent; I was focusing down to less than 1cm without error or distortion, whilst at the other end

of the scale, 10x optical zoom is more than adequate.

Focal length is from 3.3 – 33.0 and there are three ISO settings of 100, 200 and 400. Low-light usage was not brilliant, but those three CCDs need some decent candle power to get the light hi-def needs and indeed this is common to all hi-def models. The claimed battery life is one hour, 20 minutes per charge, which takes around twice that time.

So, would I buy the new JVC GZ-HD6? My own preference, as I do a lot of editing, is to keep with tape, but for a camcorder at the top end of the consumer range, the GZ-HD6 in my opinion crosses the t's and dots the i's and would be my first HDD choice.

David Hague



CONTACT	JVC
ONLINE	www.jvc-australia.com
MARKET	Everyone
PRICE	\$2,199

- ✓ Fujinon lens; LCD; true hi-def; HDMI.
- ✗ No viewfinder; zoom rocker switch.

9/10



Seek versus destroy

In the red corner: data destruction software. In the blue: file recovery software.

Data is king. No matter what you do on your computer, ultimately it all comes down to data and the value you attribute to it.

The good news is that there are plenty of software tools available that enable you to properly delete data from your hard drive and recover files that you've accidentally thrown away. There are two separate requirements here, and they need to be mutually exclusive — if you've spent time and effort thoroughly deleting a file, the last thing you want is a third-party piece of software to turn up and recover it.

Tools such as Recover My Files and Drive Erase Pro exist to extend the way that Windows handles file deletion. Throwing something in the recycle bin just moves it to a different folder, and emptying said bin simply deletes the reference to that file from the File Allocation Table (FAT). This method leaves the data pretty much untouched in its old position, and very much recoverable.

DELETING DATA FOR GOOD

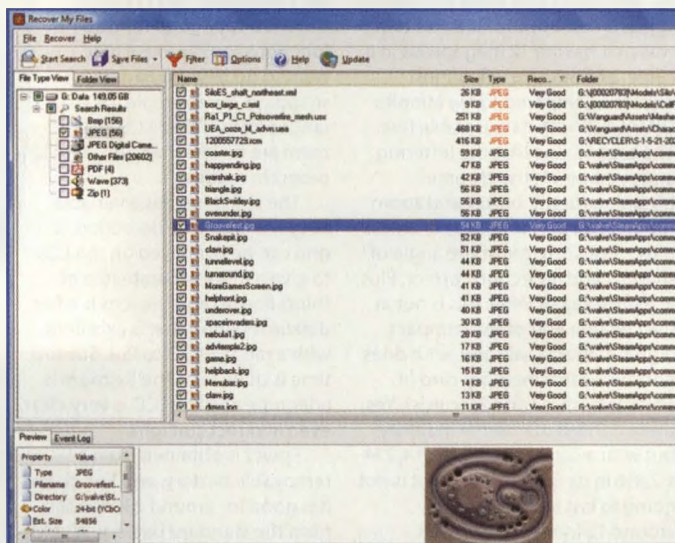
What may be less well known is that said data can still be recovered even when the hard drive is formatted and when that data has been

written over. The zones on the hard drive platters that define whether it holds a one or a zero are set by a signal that can be masked to discover what the previous state was. In fact, not only can the previous state be retrieved, but the state before that as well, and so on. Things only enter the truly unreadable after several rewrites, with nine rewrites considered necessary to render the original data completely irretrievable.

This is why the likes of Drive Erase Pro can be set up to write patterns over your data nine times if you so wish. There is a practical twist to this though, and that is that the cost to pull any kind of data off a hard drive with even a single overwrite is incredibly expensive, making it considerably less of a threat than the Drive Erase Pro manual suggests. Such excesses are undoubtedly worth it for data that could put lives at risk, but certainly not for standard day-to-day use.

RECOVERING LOST FILES

File recovery is far more common. It would be fair to say that everyone has accidentally thrown something in the recycle bin and then groaned after emptying it, or found an old corrupted hard drive that holds data



you want or need. Professional data recovery is an option in both cases, but using the likes of Recover My Files is certainly a first step worth taking — especially as the program does a good job of finding the files you're after.

Both titles share the problem of not being needed on a constant, or even regular, basis. This makes them less appealing as a value proposition, although if they do manage to get your files back,

Recover My Files: you may not want to recover everything you find.

or keep your company data a secret, then they could be considered priceless. There are also plenty of tools available from freeware and shareware sites that offer similar functionality, albeit without the smoother interfaces. And for that, you may well be happy to pay that little bit more.

Alan Dexter

Recover My Files

There are never any guarantees when it comes to data recovery, but Recover My Files at least brings a professional approach to the proceedings. Simply search for the file types that you want to recover and you'll eventually be presented with a list of files found.

It works well, finding over 20,000 files on our test system, and while several were overwritten or only offered a poor chance of recovery, others could be retrieved. The problems with this software are more

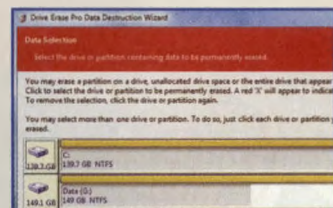


likely to do with your own impatience than any particular issue with Recover My Files itself — it's something of a resource hog in operation, and can take time to complete.

Drive Erase Pro

This really is a specialist piece of software. We can see it causing just as many headaches as it relieves, and its manual warns you to think carefully before acting. It's a loaded gun that will only be useful if it's handled responsibly.

In operation it does exactly what it says, and we certainly couldn't see anything on the freshly erased test hard drive using Recover My Files. Even single file deletion refused to show up after going through the File Shredder, so it did its job. Of course,



you've got to have a really good reason to obliterate files like this, and even the browser cache clearing to protect your bank data isn't quite enough to make that price tag a bargain.

CONTACT GetData
ONLINE www.recovermyfiles.com
MARKET Everyone
PRICE US\$59.95

Effective at recovery.
Resource hog; time-consuming.

8
10

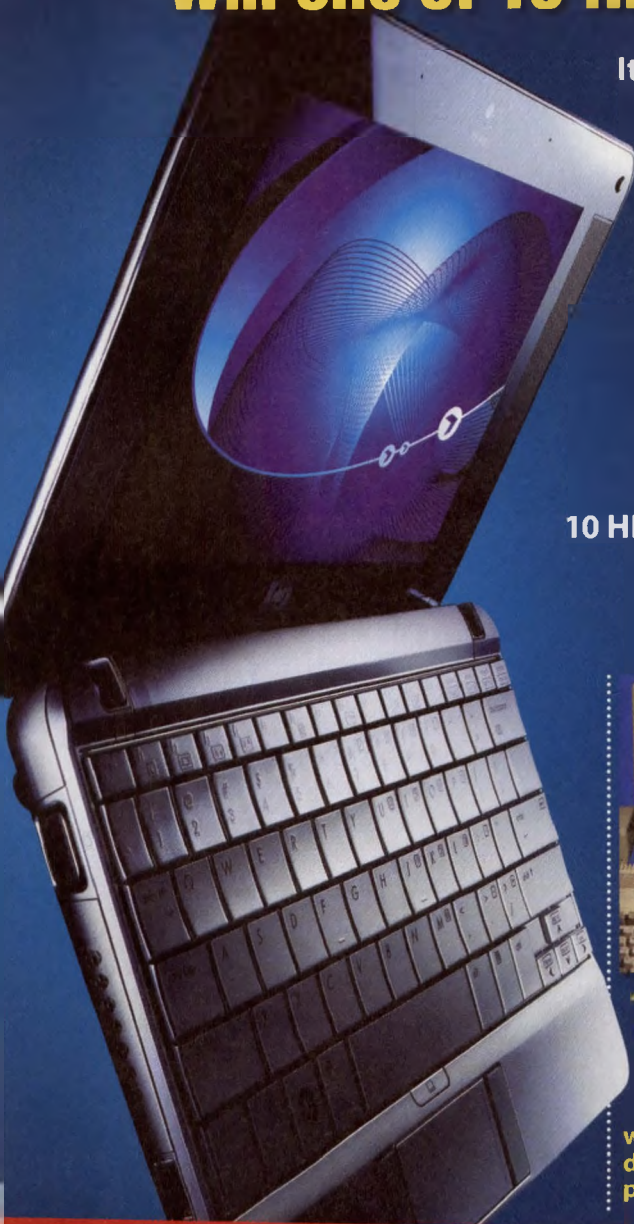
CONTACT Nova Development
ONLINE www.novadevelopment.com
MARKET Everyone
PRICE US\$29.95

Thorough.
Do you need it?

6
10

Our **BIGGEST** reader competition **EVER!**

Win one of 10 HP 2133 ultraportable PCs



It is undoubtedly the sexiest ultraportable PC to cross the testbench of APC Labs. It has a sleek aluminium chassis, a keyboard that's 92% full size, a 1,280 x 768-pixel 8.9in screen, an ExpressCard slot for 3G broadband cards, a 160GB hard drive, it weighs just 1.2kg and we want one... drool!

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"The Amiga 500 was ahead of its time... the games had real playability, and the graphics hardware was killing PCs of the day, with awesome parallax scrolling..."



"I decided to build my own PC, comprising a Thermaltake M9, Nvidia 7900 and 2 x 1TB hard drives. Why? Because I wanted utmost control over my system spec..."



"I knew it was over between me and Vista when I saw her in the shop. A beautiful 24in iMac. She had feline looks and big-cat power inside, thanks to OS X Leopard..."

Review your own PC to enter the competition now! www.apcmag.com/reviewandwin.htm

The competition rules

This competition is a game of skill. To enter the competition, readers must (1) sign up for an account on apcmag.com (2) create a discussion thread in the 'Reader Review' section of the APC forums and (3) post a review of their own PC in that thread. (4) The review must comply with APC's existing forum rules. A reader may enter as many times as they like as long as the review is of a different computer each time. The competition commences Monday 21 April 2008. The competition finishes on Friday 15 August 2008. Winners will be announced on apcmag.com by Friday 22 August 2008. Winners will be contacted via their pre-registered apcmag.com account email address. Entrants who do not win will not be contacted. Reviews submitted become property of ACP Magazines Ltd. ACP Magazines Ltd will not be held liable for technical issues, including but not limited to web site failure, loss of data or other computer or internet-related problems that influence the result of the competition. If any of the winners cannot be contacted within 30 days of the announcement of winners, ACP Magazines Ltd reserves the right to reallocate the prize to another entrant. Open only to residents of Australia and New Zealand. This competition is not open to staff or contractors of ACP Magazines or PBL Media, or parent companies or subsidiaries. The official rules of the competition are available at <http://apcmag.com/reviewandwin.htm>. Only valid entries that meet the requirements will be considered as part of the competition.

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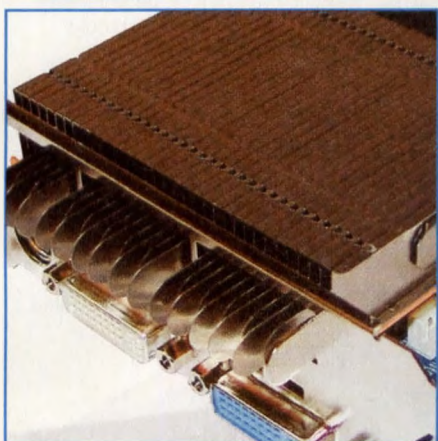
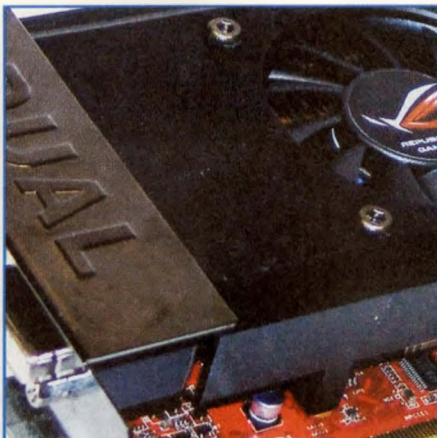
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PC graphics revolution

Shane Baxtor looks at the newest graphics cards for your PC.

Buying a graphics card has never been an easy task, but over the past year it's become harder with AMD and Nvidia releasing a huge array of models.

With an increased amount of partners on both sides, we're seeing more variations of cards than ever before. Reference design cards have

become passé and Nvidia and AMD partners continue to stand out from the pack by offering increased clock speeds, after-market cooling and extensive bundles.

Throwing aside the reference look, we're going to be checking out what the current crop of graphics cards are capable of

when you really let Nvidia's and AMD's partners loose.

We've got everything from stock-clocked to overclocked and silent to noisy cards.

It doesn't matter if you want to game at 1,280 x 1,024 on your old CRT or play the latest and greatest game on your new 30in LCD

pumping out 2,560 x 1,600, there's going to be a graphics card here for you today.

With the rule book thrown aside we'll see just what companies like ASUS, BFG, Gigabyte and more are capable of doing to make their cards stand out from reference designs and competing brands.



Gigabyte 9600 GT Silent-Pipe III

When you combine people's love of a good-value chipset like the 9600 GT and their passion for complete silence, you end up with the Gigabyte 9600 GT Silent-Pipe III. The Silent-Pipe series of cards have been running for a while now, and, as the naming states, they're currently up to their third generation of cooler, which has had minor tweaks and updates to make it handle the new higher-powered chipsets.

As is the case with most cards using passive cooling, the Gigabyte offering comes in with the standard 9600 GT clock speeds, which are 650MHz on the core, 1,625MHz on the shader and 1,800MHz on the 512MB of GDDR3 memory.

The 9600 GT in its stock form is fairly quick and generally gives you the ability to play most current-generation games at resolutions of up to 1,920 x 1,200, depending on in-game settings. Of course, there is always the odd curveball like *Crysis* that really applies the pressure to the mid-range 9600 GT at the higher resolution.

For the most part, games like *Company of Heroes* and *World in Conflict* can be played at the higher resolution with medium settings. Something like *Unreal Tournament III* can be played with the settings set to high, and anything Source-based can generally be maxed out and have some anti-aliasing (AA) and anisotropic filtering (AF) turned on for extra eye candy.

With SLI capabilities, the 9600 GT Silent-Pipe III really has the

ability to be pumping out some major frames without a decibel of noise.

Overall, performance isn't anything out of the ordinary, with it scoring like a stock-clocked 9600 GT should. It comes as no surprise either that when you head to the back of the card to check out the temperature, you get a very warm reading. While the card does run hot, it never missed a beat during our testing. This isn't of any real surprise, though, as we highly doubt Gigabyte would have released a card that would have issues under passive cooling.

Diving a bit deeper into the box and getting past the graphics card, we found ourselves greeted with nothing out of the ordinary. Included in the package is a single DVI-to-VGA connector, Component/S-Video out cable, Molex to six-pin convertor and a driver CD.

Something else Gigabyte has

included in the package however is its new Gamer HUD software that lets you overclock the graphics card along with keeping an eye on the temperatures. The 9 series bought the ability to not only overclock the core and memory individually but also the shader clock, this really gives you the ability to fine-tune the performance. If you want to go a little wild you can also start working with the voltage settings; while the increased voltage will let you overclock higher, it's going to add more heat into the mix (which generally isn't something you want to do with a passively cooled card).

If you're looking for a

truly silent mid-range card that doesn't break the bank, the Gigabyte 9600 GT is aimed perfectly at you. If the bundle included a game it would be nice, but more so if it included a DVI-to-HDMI adapter. This card could quickly become the perfect companion for an HTPC machine where the user wanted to also do a bit of gaming. Gigabyte has aimed to create a mid-range card that could play current-generation games, all without making any noise. While the card does run a little warm, as you would expect, it runs flawlessly and has a clear target market in mind.

\$209**8/10**



\$279

7/10

Leadtek PX8800GT ZL 512MB

While the general talk of the town is the 9 series from Nvidia, the 8 series are still very current models by design, with resellers still stocking them. Until Nvidia releases something under the GTS naming scheme in the 9 series department, the 8800 series continues to be the card to fill that huge price gap between the 9600 GT and the more expensive and more powerful 9800 GTX.

Currently there are two 8800 models on the market: the cheaper 8800 GT and the more expensive 8800 GTS. Both cards carry 512MB of GDDR3 memory. The particular model we're looking at here today is the Leadtek PX8800 GT ZL 512MB, which carries with it an after-market Zalman cooler.

Moving to the Zalman cooler has meant that the normal slimline single-slot card has become dual-slot, though the low noise levels and better cooling are normally enough to outweigh this.

The package includes the normal driver CD, manual, Molex to PCI-E power convertor, Component-Out dongle and DVI-to-VGA adapter. Like Gigabyte, with several of its graphics card bundles, it also has a full version copy of *Neverwinter Nights 2* included in the bundle.

Moving to the after-market Zalman cooler also means that Leadtek can increase the core clock on the card from the standard 600MHz to 650MHz. Unfortunately, Leadtek has chosen to leave the memory at the stock 1,800MHz DDR, which is a bit disappointing since they have taken the time to overclock the core and install an after-market cooler.

Deciding to go an 8800 GT over the 9600 GT is going to cost you roughly 10% more, with performance also being roughly 10% more than the 9600 GT. The upgrade really offers excellent value for money if you're looking for something that has a bit more

punch out of the box. The extra 10% performance can give you the ability to move from high to very high or even turn on a bit of anti-aliasing while still getting a playable frame rate in most of today's games.

While performance is better than the 9600 GT, the 8800 GT does still lack some media centre capabilities. While it does have features like hardware decoding, we don't see embedded HDMI ports on the card or DVI-to-HDMI connectors included in the package.

With the amount of talk about the 9 series of graphics cards, people are beginning to forget about the extremely capable 8800 models from the last generation. With the revamp to the G92 core earlier this year, the 8800 series was given a new lease of life. The newer 9 series has never offered anything revolutionary in the upgrade department; what it did do though was bring

higher performance at a cheaper price. With massive amounts of 8800 cores still available to Nvidia's partners, pricing on the 8800 GT and 8800 GTS has dropped considerably from earlier this year, meaning if you want to spend more than a 9600 GT but less than a 9800 GTX you still have some very good options out there from the last-generation naming scheme.

While the 9600 GT covers both gamers and media centre enthusiasts alike, the 8800 GT is more focused towards the gamer, with performance being the main criteria alongside value for money. If you're looking for a bit more performance than what the 9600 GT offers and you have some extra money to burn, the PX8800 GT ZL is a good option.

However, if you're looking for something a bit cheaper that can also double as an HTPC solution, one of the many 9600 GT offerings may be a better choice.



BFG Tech 9800 GTX OCX

The jumps in price and performance between the 9600 GT and 9800 GTX are quite significant, and it's quite surprising to see that Nvidia hasn't released a 9800 series card under the GTS naming scheme in order to have something sit between the two cards. BFG Tech, best known for its overclocked cards and life-time warranty, has actually attacked the 9800 GTX quite aggressively with its OCX model.

The stock 9800 GTX core, shader and memory clock come in at 675MHz/1,688MHz/2,200MHz DDR. BFG Tech has three OC models: the standard OC comes in at 700MHz/1,728MHz/2,200MHz DDR; the next model up, the OC2 carries clocks of 715MHz/1,782MHz/2,250MHz DDR; and finally, there's the top model, the OCX, which we have here today.

This gets a nice increase across the board with the core coming in at 755MHz, the shader getting increased to a healthy 1,890MHz

and the 512MB of GDDR3 memory coming in at 2,300MHz. BFG Tech has managed to achieve these clocks with the stock cooler, which is dual-slot and very effective. Its noise levels are pretty standard for a high-end card.

The good news is that all overclocked models have a life-time warranty that is actually valid in Australia; this is great news, as life-time warranties offered by other manufacturers are actually reserved for the United States.

This is an important factor if you're looking for a highly overclocked card with a good warranty. The bad news however is, if you're looking for the cheapest 9800 GTX on the market or a big bundle, the card isn't really for you. Inside the package we find the normal driver CD, manual, DVI-to-VGA connector and component-out cable. Alongside these we also have a DVI-to-HDMI adapter along with a loop back cable that lets you get sound

through the HDMI adapter by linking your graphics card and sound card together.

While the 9800 GTX might not offer a revolutionary increase in performance compared to the last generation of high-end cards, the OCX variant does a very nice job of handling everything you throw at it. The card really gives people the ability to start turning AA and AF on in most games, along with the ability to play games at the higher 2,560 x 1,600 resolution offered by 30in monitors.

If you're looking for even more performance, the 9800 GTX offers the ability of Tri SLI, which lets you link three cards together with a compatible motherboard. Unfortunately, the gains offered with three cards are pretty disappointing, but if you add only a second card into the mix then you're able to see gains of up to 80% if the game is able to take advantage of SLI. This really gives you the ability to game on

those larger monitors in higher detail — and overall represents superior value when compared to the 9800 GX2.

What BFG Tech offers is a no frills, all thrills 9800 GTX; you don't get a game that you probably don't want to play anyway, and other little extras that would probably be of little to no interest are left out. You do however get a highly overclocked 9800 GTX that performs extremely well, all under a true life-time warranty. This premium does come at a cost, and the OCX 9800 GTX is one of the more expensive offerings on the market today.

If you don't mind overclocking yourself with a limited warranty in place, the card may not seem like the best value. On the other hand, though, if you can't be bothered with overclocking and you like the peace of mind that a life-time warranty brings then the card represents excellent value for money.

ASUS HD 3650 TOP

If you find yourself wanting a discrete graphics card solution to do a bit of light gaming, or you're just looking to have something which has hardware decoding for your HTPC, then the chances are the HD 3650 is the card for you. Like most cards from this generation of AMD models, it didn't get recognised as much as it probably should have.

The ASUS version we have on hand today comes in the TOP form, which means it's overclocked straight out of the box. While the HD 3650 clocks aren't all that exciting with a 725MHz core and a 1,425MHz DDR clock on the 256MB of GDDR3 running across a 128-bit memory bus, ASUS has managed to up those to 800MHz on the core and 1,600MHz DDR on the memory. In the low to mid-range department every MHz counts, and it's nice to see ASUS take the time and effort to find out what the card is capable of (and give people the ability to get the best out-of-the-box performance for a mid-range card).

Opening up the box and getting stuck into the package, we see the normal light bundle that we're use to seeing with most low to mid-range graphics cards. Apart from the manuals and driver CD we have a TV-Out cable and a DVI-to-HDMI adapter. The

inclusion of the DVI-to-HDMI adapter is where the card really begins to make sense. The low power figures under load, hardware decoding and low noise levels make the card a perfect contender for anyone who is looking at getting something into their HTPC that can take care of all that Hi-Def material.

Gaming performance really isn't a strong point of this card, and we quickly discovered this upon firing it up in our test system. The low clocks, memory bit bus and just general low-range specifications of the card meant that it was never going to be a power house. While you could get a bit of Unreal Tournament III in if you dropped the resolution and

the settings down, you're probably going to be disappointed on a whole with the look and the feel of most games.

With that said, though, if you find yourself down at your local game stores rummaging through the \$9.95 bin, the little overclock and the choice to go GDDR3 instead of GDDR2 should be enough to enjoy some of the more 'classic' titles.

Something that you want to be careful of is the companies that choose to include 512MB or even 1GB of memory on the cards, or the extremely cheap 256MB models. It's not uncommon to see GDDR2 versions of the HD 3650 that are severely crippled in the performance department. That

said, this doesn't affect its HTPC capabilities. If you can get something with HDMI it would also be a good option.

ASUS has been able to make the HD 3650 a card worth looking at with its TOP variation, carrying a decent overclock and the additional DVI-to-HDMI adapter. If you're looking for some old-school gaming or just something that is going to be able to handle 1080p content then the HD 3650 is a good choice.

Coming in at this price point, the HD 3650 really does have its uses for people on a budget. While it's no HD 3870 X2, it performs well in the segment it's designed for, making it a good option for a lot of people.

\$129

8/10





Gigabyte HD 3850 256MB

While the HD 3850 has always been a great-value-for-money card, ever since the 6600 GT was released Nvidia has really held the mid-range market. It didn't seem to matter that AMD had a cheaper and faster card: if Nvidia had done it right before then no doubt it had done it right again. This is what seemed to be the mentality. Available in both a 256MB and 512MB flavour starting from the mid \$100 range and going to \$200, it's in the perfect price bracket for a lot of people.

The particular model we have with us today is the Gigabyte HD 3850 256MB, which utilises its Ultra Durable 2 technology that is designed to help keep temperatures down and performance up. The card carries with it the standard HD 3850 clock speeds which are 670MHz on the core and 1,400MHz DDR on the 256MB of GDDR3 memory.

Inside the package we have two DVI-to-VGA connectors, Molex to PCI Express, TV-Out box, CrossFire Bridge, manuals and driver CD. The main bonus found in the package is a full version of *Neverwinter Nights 2*, which really does let you start enjoying your new graphics card purchase straight away.

One of the main standout points of the Gigabyte

HD 3850 is the fact that it has opted for an after-market Zalman cooler which is made up of copper and aluminium. This helps keep temperatures down along with noise levels.

The mid-range market is all about value for money, and with Nvidia releasing so many cards over the past six months and such fantastic-value models, it has become harder and harder for AMD to keep up with the competition.

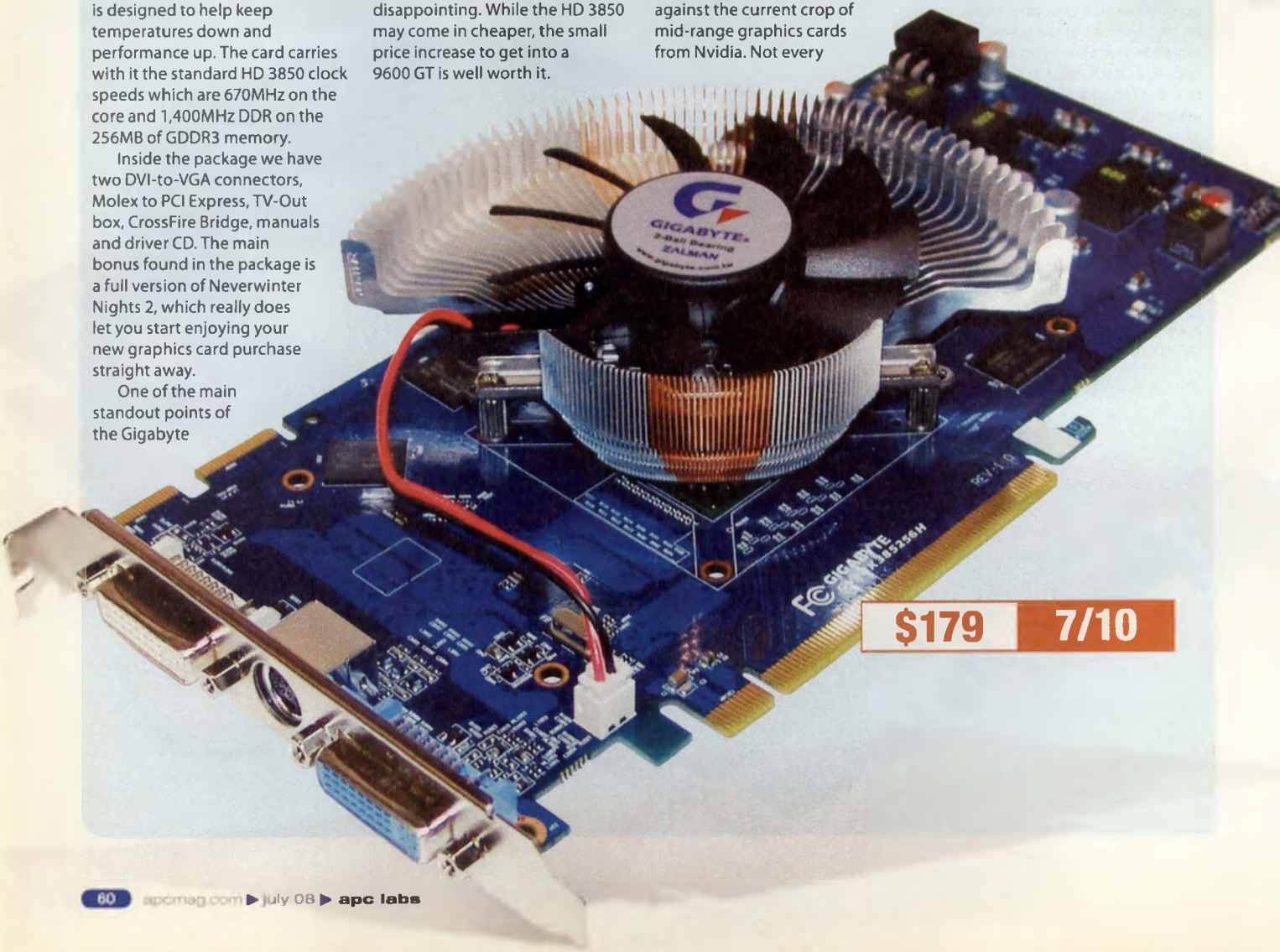
With the aggressive pricing from Nvidia on the new entry-level 9 series cards, the performance on the HD 3850 doesn't look anywhere near as good as it did six months ago, which is somewhat disappointing. While the HD 3850 may come in cheaper, the small price increase to get into a 9600 GT is well worth it.

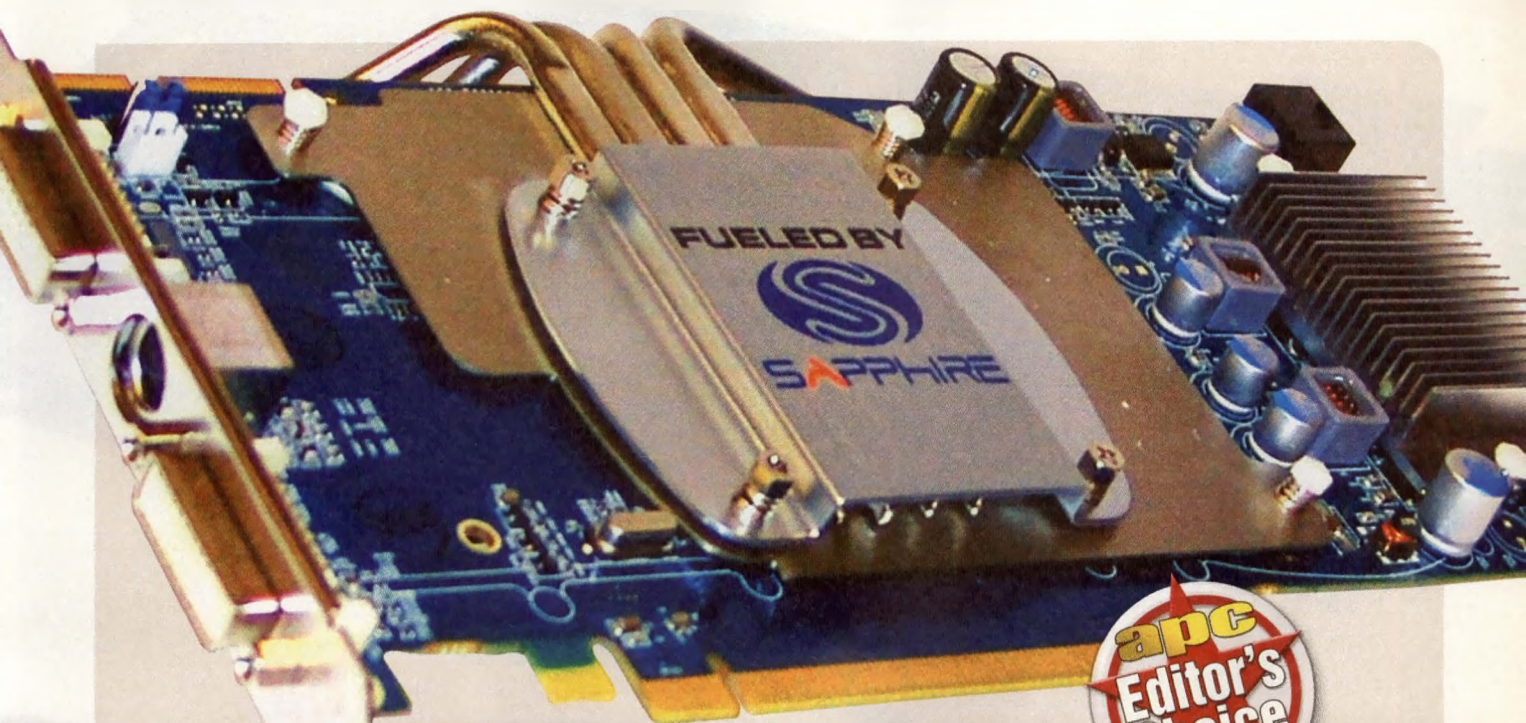
Gaming using newer games like *Crysis* is going to be an issue, even at lower resolutions. Fortunately *Unreal Tournament III*, which is still a very attractive-looking game, doesn't have the same performance hit as *Crysis*, with the game being playable at the higher resolutions and with the settings on fairly high. Then there are of course games like *Counter Strike* and *Half-Life 2* which are going to run without any issues at the higher resolutions.

While the Gigabyte HD 3850 card is extremely good quality with its Ultra Durable 2 technology and Zalman cooling, ultimately performance talks and the HD 3850 just doesn't pack the punch against the current crop of mid-range graphics cards from Nvidia. Not every

model can be a winner, and the HD 3850, while being a current-generation card, is really beginning to show its age under newer-generation games.

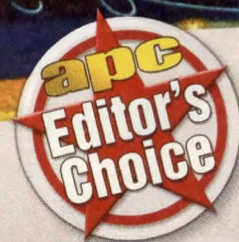
Diehard AMD fans would be better to save their money for a HD 3870 or just swallow their pride and jump on the Nvidia bandwagon with what seems to be the majority of computer users these days. We should see new mid-range cards from AMD come out during the third quarter of this year under the new 4k naming scheme. Hopefully they can begin to fight back again, as we know that the mid to low-end market is where the quantity is for both AMD and Nvidia.

**\$179****7/10**



\$329

9/10



Sapphire HD 3870 Ultimate

While Nvidia continues to release new product after new product that offers only small increases, AMD and the Radeon series have only been improved upon with newer drivers and better prices. Unlike Nvidia, AMD are taking the time to create a truly next-generation product which we will see released in the third quarter of this year.

Since there hasn't been any major advancements, AMD's partners are always refreshing the model with updates; the latest modifications to the HD 3870 come from Sapphire. The Sapphire HD 3870 Ultimate is a passively cooled HD 3870, making it one of the most high-end silent cards on the market.

The cooler really is a work of art and is designed exceptionally well; so many passively cooled cards have unnecessary protruding pieces of aluminium and copper. Sapphire uses a simple design: the front has a heat sink that covers both the core and memory,

and on the top of it we have four heatpipes that go up and over the top of the card then down the back. Here we have a massive amount of fins that help get the heat away from the card.

Carrying with it 512MB of GDDR4 clocked at 2,250MHz DDR and a single core running at 775MHz, the HD 3870 has never been a slouch. The 256-bit memory interface puts it up there with the current high-end Nvidia offerings.

Sapphire has generally been pretty good in the bundle department — as well as the standard manual and driver CD we also get CyberLink DVD Suite, CyberLink PowerDVD and a full version copy of Futuremarks 3DMark06 for those people who just love to benchmark.

Apart from the standard DVI-to-VGA connector, Component-Out dongle, Molex to PCI-E power connector and CrossFire bridge, we also have a DVI-to-HDMI adapter.

Performance-wise the HD 3870 does a good job of holding its own against the Nvidia models. While performance is a little down in Crysis, no thanks to the game generally favouring Nvidia offerings, the HD 3870 does a fantastic job at Source-based games and just about anything else you throw at it.

The card is best for gamers who want to play new games at resolutions of up to 1,920 x 1,200 with medium to high settings turned on. If you find yourself playing something older like Company of Heroes or anything based on the Source engine, you should find that you're able to play games at 1,920 x 1,200 with maximum detail. You might even find yourself turning on a bit of AA or AF to sharpen everything up a little more.

If you're looking for a high-end card that's capable of packing quite a punch, the HD 3870 Ultimate from Sapphire is an excellent choice. One of the best

features of the card is the fact that the cooler doesn't prevent you from making use of the CrossFire connectors at the top of the card. Thanks to this, you can truly have a silent high-performing rig with two cards installed. The other option you have thanks to the inclusion of the HDMI adapter is if you find yourself wanting a silent HTPC that is also able to play the latest games. If the budget isn't so much of an issue then the Ultimate offering from Sapphire could quickly become the Ultimate HTPC card.

The benefit of a silent rig does come at a cost though: the HD 3870 Ultimate is one of the more expensive HD 3870s on the market, and for some people this is going to be its biggest downfall. However, for someone who wants a truly silent rig that is able to play the latest games, the Ultimate version of the HD 3870 from Sapphire is going to be absolutely priceless and quite possibly one of the best upgrades they could get.

**\$649****7/10**

ASUS HD 3870 X2

If one core isn't enough then the HD 3870 X2 sporting two HD 3870 cores could be the card for you. While Nvidia released a dual-core 9800 card earlier this year, the technology behind its multi-GPU cards doesn't seem to be as good as AMD's, which still makes the HD 3870 X2 an excellent contender in the performance graphics card segment.

While ASUS does have a TOP version of the HD 3870 X2, which carries with it a nice little overclock, the particular model we have here today is the stock-clocked model. This means that our core comes in at 825MHz and our 1GB of GDDR3 comes in at 1,800MHz DDR. While the core on the X2 is higher than the standard HD 3870, because the card uses GDDR3 instead of GDDR4, the memory clock has dropped by 450MHz DDR.

While the card may sound very standard at the moment,

upon opening the box you're greeted by an attractive non-reference designed cooler. Spanning across the entire card we have a dual-fan setup that sits directly over each core.

There are a few things worth noting in the design of the HD 3870 X2, though. Firstly, while we have two PCI Express power connectors, one of them is the eight-pin design. Fortunately, we do get a converter in the package if your power supply doesn't have one.

The other thing is that, unlike all other AMD-based Radeon cards that carry with it the dual-CrossFire connector across the top, this one carries with it a single. What this means is that while the card does support the new CrossFire X technology that supports up to three cards, you can only use two X2s together.

Another standout point for the ASUS HD 3870 X2 is the inclusion

of four dual-link DVI ports. This makes it a great option for people who are looking for a mammoth amount of desktop space but who only have a single PCI Express slot on their motherboard.

Inside the box we have a very nice spread of DVDs and cables, alongside the normal driver CD, manual on CD and quick install guide we also have a full version copy of Company of Heroes: Opposing Fronts. We also have the standard lineup of DVI-to-VGA connectors, power connectors and TV-out cables. Further to these, we find a DVI-to-HDMI adapter and CD wallet included in the package.

Performance on the X2 has always been a strong point. However, in applications that can't make full use of the CrossFire technology, the single-core 9800 GTX is actually able to come out ahead. A prime example of this is Crysis, where the single-core

9800 GTX is the best performer at all resolutions. Under Unreal Tournament III we can see that the extra core is able to be used, making it the fastest card in this round-up.

While the HD 3870 line-up from AMD is getting quite old now, it still manages to perform very well thanks to the dedicated support from the driver team. It's nice to see that AMD doesn't feel it has to release a new graphics card every other month. Hopefully its concentration has been on the new 4k series coming in the third quarter this year.

The HD 3870 X2 still continues to be the best-value dual-GPU card on the market, and the ASUS version with its upgraded cooling makes it even better again. While the card is mainly aimed at high-resolution gamers, if you really want to up the detail at 1,680 x 1,050 then this model is also a very good option.

PERFORMANCE TEST RESULTS

	Gigabyte 9600 GT Silent-Pipe III	Leadtek PX8800 GT ZL 512MB	BFG Tech 9800 GTX OCX	ASUS HD 3650 TOP	Gigabyte HD 3850 256MB	Sapphire HD 3870 Ultimate	ASUS HD 3870 X2
3DMark06 1,280 x 1,024	10,852	12,820	14,279	4,425	9,676	11,464	15,911
3DMark06 1,920 x 1,200	8,397	9,142	12,212	3,557	7,650	9,201	14,816
Crysis 1,280 x 1,024	47.31	55.67	64.33	20.00	42.35	44.25	49.47
Crysis 1,920 x 1,200	30.84	34.03	50.25	12.93	30.99	31.11	36.31
UT3 1,280 x 1,024	79.67	111.62	123.32	41.04	69.46	87.18	101.66
UT3 1,920 x 1,200	58.55	63.48	92.4	25.57	52.3	67.94	98.93

	GIGABYTE 9600 GT SILENT-PIPE III	LEADTEK PX8800 GT ZL 512MB	BFG TECH 9800 GTX OCX	ASUS HD 3650 TOP	GIGABYTE HD 3850 256MB	SAPPHIRE HD 3870 ULTIMATE	ASUS HD 3870 X2
GPU	Nvidia GeForce 9600 GT	Nvidia GeForce 8800 GT	Nvidia GeForce 9800 GTX	ATI Radeon HD 3650	ATI Radeon HD 3850	ATI Radeon HD 3870	ATI Radeon HD 3870 x2
Memory (size)	512MB	512MB	512MB	256MB	256MB	512MB	1GB
Memory (type)	GDDR3	GDDR3	GDDR3	GDDR3	GDDR3	GDDR4	GDDR3
Memory bus	256-bit	256-bit	256-bit	128-bit	256-bit	256-bit	256-bit
Core clock	650MHz	650MHz	755MHz	800MHz	670MHz	775MHz	825MHz
RAM speed	1,800MHz	1,800MHz	2,300MHz	1,800MHz	1,400MHz	2,250MHz	1,800MHz
Stream processing units	64	112	128	120	320	320	320 x2
Texture units	32	56	64	8	16	16	16 x 2
ROPS	16	16	16	4	16	16	16 x 2
Interface	PCI-E 2.0	PCI-E 2.0	PCI-E 2.0	PCI-E	PCI-E 2.0	PCI-E 2.0	PCI-E 2.0
Power connector	Six-pin	Six-pin	2x six-pin	N/A	Six-pin	Six-pin	Six-pin and eight-pin
Outputs	2x Dual-Link DVI, TV-Out	2x Dual-Link DVI, TV-Out	2x Dual-Link DVI, TV-Out	1x Dual-Link DVI, 1x DVI, TV-Out	2x Dual-Link DVI, TV-Out	2x Dual-Link DVI, TV-Out	4x Dual-Link DVI, TV-Out
Power draw (max)	222	246	290	188	198	250	372
Cooler	Passive	Active	Active	Active	Active	Passive	Active



✓	Silent; good mid-range performance.	Overclocked core: good pricing.	Good overclock and excellent warranty.	Excellent value; perfect for an HTPC.	Excellent build quality.	Excellent performance for a silent model.	Great after-market cooling; performance.
✗	Software bundle is lacking.	Memory running stock speeds.	Software bundle is lacking.	Not exactly a speed demon.	Not as powerful as similar priced cards.	One of the pricier HD 3870s.	Quite an expensive model.
Verdict	8/10	7/10	9/10	8/10	7/10	9/10	7/10



CHOOSE YOUR FORMAT AND STORAGE

HDD-BASED The main advantage of an HDD-based camcorder is storage. For example, 120GB is now quite common, and can store up to 48 hours of footage. The downside is that you have to then store the data somewhere. Considering the hard disk space is bigger than many laptops, it can be a problem. They are perfect, however, when you want a quick startup, point-shoot-playback camcorder, and have no desire to heavily edit the footage.

DVD-BASED The format used to create DVDs is highly compressed and therefore inferior to other types. Add to that the difficulty in just popping into the corner store to buy the baby DVDs they use and the difficulty in editing anything that has been shot, plus relatively low storage capacity, this makes the DVD-based camcorder probably the worst type to buy.

SD CARD-BASED Companies such as Panasonic are betting this is the way of the future. SD cards are small, cheap, easily available, and their capacity is growing all the time (64GB cards aren't too far away). They record in the more difficult-to-edit AVCHD format, which means, when editing, a powerful PC with software capable of loading this format is needed.

TAPE-BASED The original and still the best in the opinion of many. It's no accident that TV stations still predominantly use tape. It's easily obtainable, storable and inexpensive. Simply, if you are serious about your filmmaking, stay with the tried and proven format.

'TRUE' HI-DEF vs AVCHD True HD records at 1,920 x 1,080 pixels in a progressive mode. AVCHD offers comparable picture quality to HD but is highly compressed. AVCHD can be transferred faster than HD, and the specification states it can use SD cards and hard drives (HD can't, it's strictly tape only). So, in effect, you can treat AVCHD as an HD 'Lite'.

HD camcorder buying guide

If you're buying a digital camcorder, high-definition is now a must. *David Hague* looks at the plethora of formats and compares three of the latest and best HD video cameras.

Not too long ago, if you wanted to buy a video camera, there were a few brand names but only one choice of media: tape. Today, the number of brand names hasn't grown a great deal but the type of media that is available has expanded somewhat. As well as tape, there are DVD, hard disk (HDD) and SD memory card-based video cameras. Further confusing the consumer is the

availability of these media in either standard definition, AVCHD (consumer hi-def) or true high-definition format.

Let's face it: standard definition (SD) is quickly going the way of the dodo. There is no legacy problem, as high-definition (HD) cameras can still read and write these tapes. The price of HD cameras is now on par or below SD cameras and, much more importantly, users want to use

their shiny new plasmas or LCDs in all their high-definition glory. This means the ability to playback native HD direct from camera to display panel, or the option to edit the footage, burn it to a Blu-ray disc and then playback on a Blu-ray player or Playstation 3.

So if you are in the market for an HD camera, which is the way to go? Well, it depends upon what exactly you want — or don't want — to do.



Sony HDR SR12

It used to be that professionals would say "Yes, I know a camcorder can take still shots, but trust me, they're not good enough. Get a real camera for that." Well, that can't be said anymore, as the new Sony HDR SR12 has built-in 10.2 megapixel still camera ability. That's right: that's more than the original Canon 1D Mk1 DSLR camera which has become something of a benchmark and sells for \$10,000+ for the body alone.

In comparison, the SR12 is only \$2,199 and is a hi-def camcorder to boot, storing its footage on a massive 120GB hard drive giving up to 48 hours of shooting. And no, that's not low-res grainy stuff, that's fair dinkum 1080i HD footage.

The SR12 has almost everything going for it that a perfect camera should. All the boxes are ticked for

CONTACT	Sony Australia
ONLINE	www.sony.com.au
MARKET	Everyone
PRICE	\$2,199

- ✓ Has all necessary I/O ports; picture quality.
- ✗ Lack of extender on viewfinder; bit pricey.

8/10

headphone and microphone jacks, tiltable viewfinder, face detection, ability to back up the hard drive to DVD without needing a PC and a nice big 3.2in LCD.

An interesting control is the CAM CTRL dial on the front of the camera. At default, this is used as a focus control, and while it is not as good as a genuine dedicated focus ring, it's better than nothing. However, you can assign another command to the CAM CTRL including Exposure, White Balance and AE Shift.

As well as a manual mode, for those that simply want a point-and-shoot camcorder, there is an 'easy' mode where the SR12 will make the hard choices for you. Once the

button is pressed, anything remotely technical is removed from the menus — it really does become a no-brainer at this level!

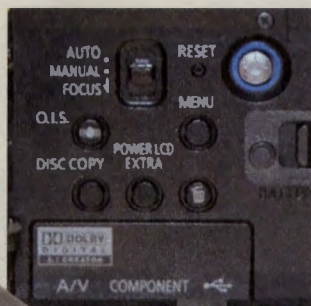
All of the controls follow the standard Sony pattern of on/off on the rear surrounding the start/stop button, on the top are the photo and zoom left-to-right rocker and inside the flip-out LCD, Nightshot and battery info buttons. Everything else is controlled via on-screen menus. The I/O ports are easy to find and safely tucked away in various parts of the body.

So is there anything to not like about the SR12? Sadly, yes there is. Sony still insists on using Memory Stick (not SD memory), so to use it

as a still camera, you'll have to buy a large one. And while it's gratifying that Sony has kept a viewfinder on the SR12 — a trait many of its competitors sadly don't follow — and it is tiltable, it's not extendable, meaning your nose is pushed against the battery, so if you opt for a bigger battery, it makes it all but useless.

Sony has also removed the printed manual, instead offering a PDF on a CD, which also contains Sony Vegas Movie Studio for video editing — but only a trial version, which is a bit miserable seeing it is their own software. Mac users can rejoice though, as iMovie 8 can be used to edit footage.

Those things aside, if you want a quality camcorder that shoots in hi-def AVCHD, has all the fruit and is small and sturdy enough to throw in a backpack, the SR12 is worth a good look.

**\$1,869 FULL HD**

Panasonic HDC SD9

For a camcorder that packs such a wallop, it is a tiny little beast, quite easily sitting in the palm of your hand. Light too, but being an SD-based camcorder, there is no hard disk weight to consider. Unfortunately, there is no viewfinder. It seems lately that manufacturers don't consider what LCD screens look like outside in the bright Aussie sun — a lack of a proper viewfinder would immediately stop me buying any camera/camcorder.

A bit of a gimmick is the inclusion of a 5.1 surround sound mic. Every sound engineer and even enthusiast videographer knows that 5.1 is added in post production, not while shooting. It is not true 5.1 either — instead a series of mic's picking up the ambient sound from five different directions. So don't let this 'feature' sway a buying decision —

CONTACT	Panasonic Australia
ONLINE	www.panasonic.com.au
MARKET	Everyone
PRICE	\$1,869

it's about as useful as digital zoom.

The on/off switch on the rear has a satisfying 'click' to it and you can visibly see if it is on or off. Users with smaller hands may not be able to reach it with their thumb while their hand is through the wrist strap, but, with a bit of practice, can use their middle finger to operate the rocker zoom control and the index finger the start/stop button.

On-screen menu commands are controlled by a tiny joystick; no touch-screen, hurrah! Underneath the flip-out LCD are the major controls including the joystick, the switch between auto and manual focus, optical electronic stability switch, disc copy and

✓ 3CCD; Leica lens; light weight.

✗ Odd location of HDMI port; no viewfinder.

8/10

the menu on/off button.

The SD9, like the Sony, uses AVCHD as the recording format, but unlike the Sony (that uses a hard disk) an SD card is utilised, allowing around six hours recording on a 16GB card in the lowest resolution and two hours in full 1,920 x 1,080p hi-def mode. The SD9 ships with a pair of 16GB SD cards, but we're sure you'll be reaching for your wallet to buy a couple more very quickly — and hopefully 64GB cards are not too far away.

The image quality of the SD9 has a distinct advantage over many of its competitors in that it is a 3CCD camcorder. This advantage is further enhanced by the use of a

Leica Dicomar lens with a useful 10x optical zoom.

It may take you a while to find the HDMI connector on the SD9; it's underneath the battery! This means the SD9 has to run on mains power to play back via HDMI to TV.

The colour reproduction of the SD9 is superb. Certainly the 3CCDs help out and, if this is your primary goal, then this could very well be the camcorder for you. Not so good is the battery life of just over an hour. Considering there is no hard disk to power, this is disappointing and is further exacerbated, as there is no viewfinder — hence the LCD is chewing lots of volts.

SD camcorders are still in their infancy, and we would be waiting for another generation before embracing it. Although, there certainly is a huge potential here (having said that).

SONY

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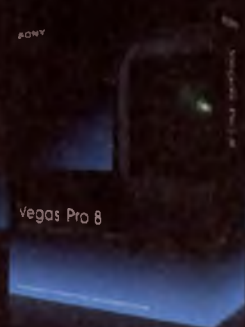
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**\$1,449 FULL HD**

Canon HV30

The Canon HV 30 is the only one of the three camcorders in this roundup to use tape. No fancy media here; good, old plain video tape in MiniDV format. This gives the HV30 a distinct advantage in that it is the only one here to support full HD instead of AVCHD. And, surprisingly, at \$1,449 it is also the cheapest by quite a margin.

It has a stronger feature list too, with a genuine Canon lens straight from its very successful EOS program, 13 pre-programmed AE including a 25 progressive frames per second 'Cinema' mode (a nod to those that like the so called film-look) and both headphone and microphone jacks. Indeed, for the amateur filmmaker wanting HD capability, this is probably the camera to use if the budget cannot stretch to exotica such as the

CONTACT	Canon Australia
ONLINE	www.canon.com.au
MARKET	Prosumer
PRICE	\$1,449

Canon XHA1, Sony Z7P or even top-of-the-range JVC Everio.

Many of the things found in these higher-end (and much more expensive cameras) are in the HV30. For example: zebra patterning showing over-exposed areas is standard; the aforementioned headphone and external mic jacks are a must in serious film-making; there is a proper viewfinder; and 10x optical zoom is fine for most work in this area.

Another advantage over the Sony and the Panasonic is that the HV30 is the third generation of its model (starting at the HV10) and its predecessor, the HV20, is one of

- ✓ True HD; zebra patterning; good value.
- ✗ Only 3MP stills; smaller LCD than competitors.

9/10

the most awarded camcorders on the market. Canon has built on its strengths and listened to customers, and this shows.

Like most things though, there are some downsides. The still image capability is only 3MP, way behind the Sony at 10+. This camera is the perfect example of using a dedicated still camera to take static shots. It would only be useful for quick researching shots or in an emergency. Second, and this is more of an HD problem than of the HV30, is that transfer of files from tape to a computer for editing is in real time: 60 minutes of footage will take 60 minutes to transfer. Because of the fact it is

HD, some serious computer oomph is needed for editing, and to get the best effect, higher-end software may be needed.

What it boils down to is that the HV30 has been designed for the better-than-average videographer to learn its nuances and strengths and then use these to their best ability to make films. Sure, if you want point and shoot, it'll do that too, but that would be wasting this gem. It almost begs you to take it to full manual mode, test its strengths, experiment, and make beautiful movies. In return, you'll be rewarded. If you are a beginner wanting to enter this wonderful world of video making, by all means start simple, but take the step, and while the HV30 cannot infuse talent into you, it can be a rewarding tool to showcase your own.

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Car audio and video

Head units let you plug in your iPod or video player to your car's entertainment system. *Siddharth Raja* looks at some new head units and video screens.

In the past, connecting devices to your car setup and getting it all to work properly was a bit of a struggle. Today things are different as car audio technology has caught up to the iPod generation with a range of products designed to bring your car's audio capabilities into the 21st century.

We're seeing a number of new products from OEM and aftermarket suppliers and the technology is now good enough that some products require little to no installation — leaving your precious dashboard safe from being pulled apart. Other devices fit into

your basic single-DIN or double-DIN slots like most aftermarket head-units.

VIDEO SCREENS

There was a time when installing an aftermarket LCD display meant shelling out big bucks on a poor quality screen that, if you were lucky, would have a second input and could connect to your stereo. Today, LCD screens act as all-in-one interfaces with touchscreen control for a host of features ranging from GPS navigation, television and video playback, visual equalizers and displays for reversing cameras.

Most top-end displays require at least an empty double-DIN slot in your car's dashboard and are designed as replacements for factory info and GPS screens.

However, there are smaller single-DIN monitors with motorised flip-out displays as well as portable units equipped with mounts to stick on your car's dash.

Depending on your budget you can opt for simple generic LCD units that offer basic video playback, or go the whole hog and get a comprehensive all-in-one system. Today, most screens range in size from about six to seven inches and

feature touchscreen capability. Newer units also feature USB and iPod connectivity and even Bluetooth handsfree connectivity.

Three of the latest products on offer are designed to connect to a portable media player and enable full control of it — essential when trying to flip through your playlist and drive at the same time. Two of the products are single-DIN CD source units with USB, Bluetooth and iPod connectivity and the other is a standalone iPod/Bluetooth controller that connects wirelessly to your car stereo through the FM waves.

Alpine eX-10

If you don't want your dashboard all hacked up but still want to connect a mobile device then something like Alpine's eX-10 is for you. The device features a small 2.4in screen that displays iPod music search options and album artwork and simply mounts to the dash using doubled-sided tape. From there you only have to connect your iPod to the main unit — which plugs into your car's cigarette lighter — and tune your radio to a preset FM frequency. Granted, FM transmitters aren't the best option for audio quality, but the sound of the eX-10 is very good, although it will never match a direct connection. Note that a 3.5mm auxiliary connection is also available for better sound quality, however you'll need to make sure

your head unit has this kind of connection before you go for this option. Another letdown of the eX-10 was its slow user interface, which would sometimes hang for several seconds after punching some commands into the remote.

Built-in Bluetooth connectivity and a microphone means the eX-10 turns your car into a mobile phone, with full access of your contacts and the ability to make and answer calls with the handy remote. Although the eX-10 shows little versatility compared to the dedicated head-units, it is important to note that devices like it complement your car's factory media centre rather than replace it.



Eclipse AVN6000

If you're looking for a standalone system then all-in-one devices like the Pioneer AVIC-HD3 or Eclipse AVN6000 are right up your alley. The mid-level Eclipse AVN series (Audio-Visual-Navigation) comes with GPS capability and DVD video playback and is designed as a complete replacement for your car's stereo.

The AVN6000's GPS includes all the features you would find in a factory nav system including an extensive point of interest list, a 6.5in touchscreen interface, voice announcement and automatic rerouting. There's no Bluetooth connectivity but there's

an input for connecting an iPod as well as an extra video source such as a reversing camera.

The resolution of navigation maps on the AVN6000 is lower than most aftermarket and factory-installed units we've seen, and there was no option for 3D maps, which are usually clearer and easier to read. Life is made easier with two DVD players so you don't have to swap between discs when you want to watch a movie or navigate. Audio buffs will be pleased with the built-in amplifier (50 watts x 4) and five preset digital sound processing (DSP) settings.



**\$3,799
SCREEN**

Pioneer AVIC-HD3

At the top end are units like Pioneer's AVIC-HD3, which not only has GPS and audio/video playback, but built-in hard-drives, Bluetooth connectivity and vehicle information feedback as well. Yes that's right. The AVIC-HD3 contains a 30GB hard drive for mapping software and media files. Bluetooth handsfree via a separate receiver, an optional iPod adapter and even vehicle data such as speed, acceleration and voltage feedback. Any CD you insert can be ripped and stored on the hard drive, which holds up to 10GB of music and essentially does the job of a CD stacker.

So complex is the AVIC-HD3 that it even has a gyrosensor so that GPS

navigation will work when you lose satellite reception, such as in a tunnel. Another goodie is the dual zone feature, which allows the kids in the back to watch a movie on an additional headrest-mounted screen while you enjoy music through an iPod, radio.

Sound quality for both the AVN6000 and AVIC-HD3 is likely to be better than the factory system even when you keep the original speakers. Both have sound enhancing features to restore some of the sound quality lost in the compression of digital audio files, but with the volume turned up the bass will start to rattle.

One major sticking point with GPS units like the AVN6000 and AVIC-HD3

is that you can't use the navigation features outside the car or in any other car for that matter. Eclipse, however, has another system, the AVN2210p, which features a detachable TomTom portable nav as well as a dedicated in-dash (double-DIN) stereo system.

TomTom has one of the best navigation systems on the market and is also one of the easiest to use, and the main in-dash dock also includes a USB port. At just 3.5in across, the TomTom's screen is a lot smaller than the ones on the AVN6000 and AVIC-HD3 but being able to pull it out and use it in another car is worth it. To top it off there's handsfree Bluetooth connectivity and full equaliser settings.



**\$400
HEAD UNIT**

Sony CDXGT970US

Go for a more expensive unit like Sony's CDXGT970US and you get all of the features of the Clarion plus a couple of extra goodies. For instance, the Sony comes standard with built-in Bluetooth connectivity as well as three sets of preamp outputs — ideal if you want to connect it up to an amp and squeeze more power than the standard 52 watts per channel.

The Sony's other big advantage is its joystick controller, which allows you to navigate through large song libraries and multiple settings all with the one knob. Searching through menus is done by rotating and clicking the joystick and it won't interrupt the song

currently playing. In fact, everything is controlled through this joystick as there aren't any buttons. It's tricky getting used to but eventually you will be able to intuitively flick through all the menus like a pro, adjust the volume or switch a track all without taking your eyes off the road.

Sound quality of compressed files is fine at low volumes but once you start to turn things up, usually around the halfway mark, the bass will start to rattle. To overcome this, both the Clarion and Sony feature 'sound enhancers' that restore lost samples but we found the improvements barely noticeable.

Clarion DXZ586USB

If you're only looking for a decent head-unit with the ability to connect an iPod or USB-stick loaded with your favourite MP3s then something like Clarion's DXZ586USB is the pole sitter. The single-DIN CD player needs to be installed in your car's dashboard like any aftermarket CD source, but a USB slot up front ensures easy connection for an iPod or memory stick. Once plugged in, the iPod can be tucked away out of sight as the CD player is now in control.

The display on the DXZ586USB doubles as an input device, allowing you to adjust the volume, change the

radio station or song all with a swipe of your finger. There's also a remote control and a number of buttons on the faceplate for adjusting the trickier stuff like presets and equalizer settings.

To take advantage of the DXZ586USB's Bluetooth features, you'll need to buy the separate BLT370 receiver unit. Clip this to your sun visor and you can wirelessly stream music from a Bluetooth-enabled mobile phone or answer a call and hear the person you are talking to from your car's speakers.



**\$360
HEAD UNIT**

Sony XVM-B62

At one end of the spectrum are devices like Sony's XVM-B62 portable monitor. The screen measures 6.2in across and comes with a mounting kit for sticking it on top of your car's dashboard or behind a headrest. Such units are very limited and require a separate video player as the source. Video quality of the Sony is good with a wide viewing angle and minimal glare from sunlight, but functionality is low with the only option being a pair of A/V inputs.



**\$499
SCREEN**



WINDOWS KILLER

Tired of Windows? Vista got you down? You don't have to follow Microsoft's force-fed upgrade path — in fact, as *Ashton Mills* reveals, you no longer need Windows at all.

If there's one lesson we can take from the release of Windows Vista, it's that not listening to your customers is the surest way to damage your business. Of course, if media magnates and piracy-paranoid content producers are your customers, then Windows Vista is a runaway success. Its increased restrictions and ability to control how a user makes use of their machines is unsurpassed compared to previous versions of Windows.

Only, that's not what users want out of an operating system. Nor do they want to be forced to a platform to use DirectX 10, nor do they want to have the onus of security passed onto them, nor have applications and hardware stop working or work poorly. Most of all, they'd rather not have their machines run slower, demand more hardware and *still* have instabilities after all these years of Windows development.

And above all, they don't want to have to pay through the nose for it all.

So, why do we keep using Windows? Mostly, we don't have a lot of choice — we use applications, and the applications use Windows. If you want to play games, Windows is the platform of choice. If you have specific programs only found on Windows, well, that's no choice at all.

And it is important to differentiate between applications and the operating system — if you take a look at what you use day to day, and what you need to do day to day, it's almost a certainty that these tasks you need to do don't actually need Windows itself. The applications to do them can be found on other platforms. If this is the case then you can ask: is Windows really the best choice?

THE UPGRADE PATH

For most of us, Windows came installed on our first PCs. Then with each new PC purchase, or each new Windows release, we upgraded to the latest version. In the past there weren't a lot of alternatives — OS/2 once upon a time, and very early versions of Linux — but that didn't particularly matter, as all our applications were built for Windows.

And with ubiquity on its side, why would you want to use anything else anyway? After all, the positives for Windows looked something like this: familiarity, ease of use, hardware support, and applications.

Especially applications. You didn't so much choose your operating system; you chose your applications and they chose the OS.

So, for the most part, we've been conditioned into the Windows upgrade cycle. We use it because it's there, because it does what we need, and because it's what we've always known. But mostly, because there have been no other choices.

Today, it's a little different. Thanks to the success and exposure of the iPod and then the iPhone, Macs have never been more popular. And with Mac OS X under the hood (based on a BSD Unix derivative as it is) they have become considerable competition for Windows machines.

And while Linux was once relegated to bearded geeks and 'too hard' for the average user, this too has changed in recent years. For some it's already a viable desktop, and Ubuntu Linux — one of many 'desktop distributions' — has seen explosive growth in the last couple of years.

Both now provide the essential features:

familiarity, ease of use, hardware support and applications — just like Windows does. Said another way, Windows isn't the only kid on the block anymore. You have choices.

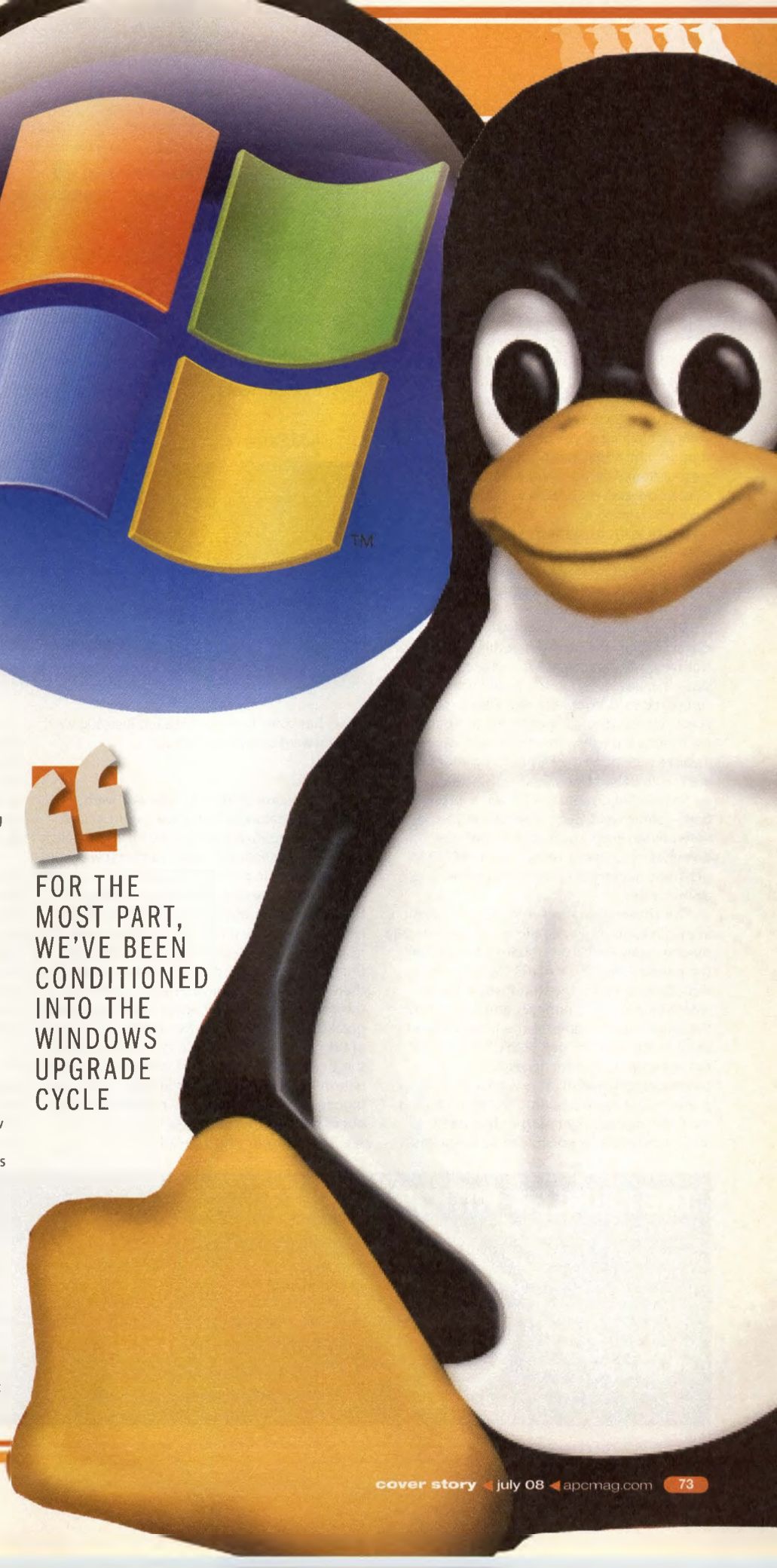
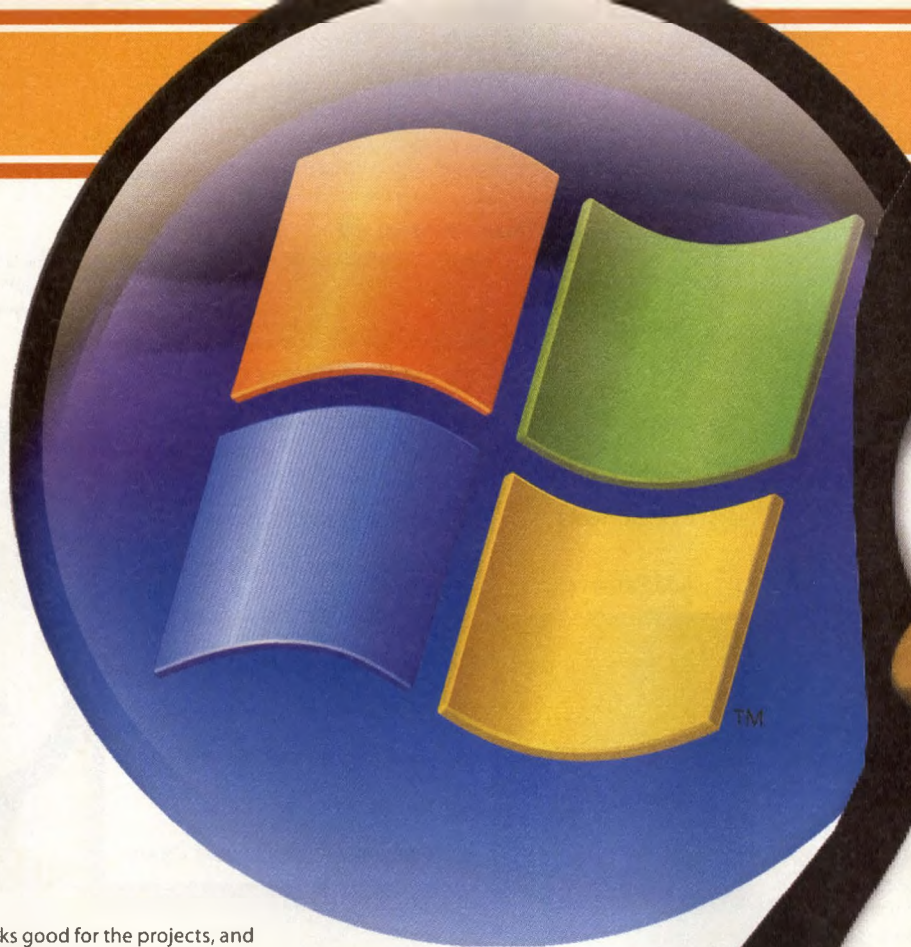
MICROSOFT'S COMPLIMENT

Microsoft knows this, which is why in recent years it has worked hard to stem the popularity of Linux. Macs, with their own hardware platform, are less of an issue for Microsoft at the moment, but Linux runs on the same hardware Windows does and so directly competes with it.

Initially Microsoft ignored the Linux upstart, then called it a virus and downplayed the open source model, and then when this failed the company did what it always does if it can't stop or buy a competitor — it tries to own its space.

Microsoft's 'Shared Source' model was an attempt to play ball in the open source field, but on its own terms (where you can't actually use the source). It also attempted to create Fear, Uncertainty and Doubt about the legalities of Linux by claiming that Linux infringes on its intellectual property — which has no effect on end users but can send chills down the spine of companies not wanting to be sued to oblivion. And so agreements like that with Novell tied some Linux distributions to Microsoft as a second-class option to Windows products, and provided indemnity against legal action, except there is no evidence Linux infringes on Microsoft IP, and the company refuses to detail what these alleged infringements are nor pursue them in court, which suggests it doesn't have a case at all. It's amazing how far hot air can get you.

Recently, Microsoft has been contacting open source projects with offers of aid to improve Windows interoperability. On the



surface, this looks good for the projects, and Microsoft benefits by having popular open source applications run better on Windows.

But if Microsoft was serious about interoperability it would also provide aid for Windows applications on Linux. The move isn't about cooperation — it's about removing one less reason to use Linux — remember, people use applications, not operating systems, but the applications determine the operating system and Microsoft would much rather keep you with Windows.

Why is all this important? Because if you're wondering if an alternative like Linux is good enough to replace Windows, to provide the applications and tools you need day to day, there is no greater confirmation than from Microsoft itself. All these manoeuvres are the greatest compliment and affirmation of the capabilities of Linux.

Microsoft thinks Linux is good enough to compete with Windows, good enough for you to use, but would really rather you didn't know that — as Microsoft Australia most recently demonstrated by not only modifying Windows XP to put on ASUS's new Eee PC to match the Linux variant, but to arrange it so that the Windows version only would now be sold in mainstream stores.

It's a battlefield out there, and with Vista faltering and rapidly becoming known as a disaster, and with alternatives like Macs and Linux being better than ever, the door is open to break the Windows upgrade cycle.

THE OPEN SOURCE CHALLENGE

Back in 2006 we asked the question 'Can Linux replace Windows for your desktop?', and so



FOR THE
MOST PART,
WE'VE BEEN
CONDITIONED
INTO THE
WINDOWS
UPGRADE
CYCLE



began the Open Source Challenge — a 10-month trial that used a cold-turkey approach to replace Windows completely with Linux and see just how viable it would be. At the time we chose Ubuntu Linux as it had become widely known as the easiest Linux distribution, and thus a good candidate for the challenge.

We set high demands and expectations for it. Windows has its faults, but for Linux to be a possible replacement it had to at least meet the same level of functionality Windows provides. So we held it against some very strict principles around familiarity, ease of use, hardware support, and applications (the same four tenets we mentioned earlier). And we told it like it is — praising it where it fared well, and lambasting it when it fell down.

Which leads us to the golden rule of an operating system: to enable you, the user, to do what you want to do, when you want to do it. That's the benchmark, that's the goal of desktop operating system design.

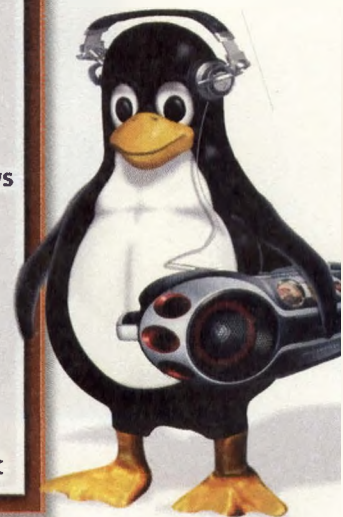
Sounds simple, but no operating system currently available succeeds at this completely. Not Windows, not Mac OS X, and not Linux. Vista, in many ways, is a *step back* from this goal compared to XP. Arguably, Mac OS X probably comes closest (there is something to be said for controlling the hardware *and* the software). But if you're sticking to the PC platform, your options are Windows and Linux.

So how did Ubuntu fare? It was a mixed bag — some tasks (such as email, office and networking) were just as easy or easier to do under Linux, while others (such as DVD playback, gaming, and webcams) were a dismal failure.

Our challenge started with the latest version at the time, Ubuntu 6.06, and due to six-monthly release cycles ended on Ubuntu 7.04. During this period some of the issues we had with it were fixed (perhaps the Ubuntu developers were following our journey?), and we concluded the series with a middle-of-the-line conclusion: can you replace Windows with Ubuntu? Mostly, but not entirely and not necessarily easily. Technically orientated users would have no problem, but as we said time and again during the Challenge the operating system needs to make it as simple as possible to do all the tasks



Ubuntu comes installed with all the essential applications.



a user has come to expect. We left it saying we'd look forward to future releases.

THEN AND NOW

With the release of Ubuntu 8.04, aka 'Hardy Herron', we naturally had to take another look and see if Ubuntu had improved further. Could it iron out the remaining issues such that we could recommend it in place of Windows?

Since 7.10 the rate of development has been impressive, and one by one most of the issues we found in the Challenge have been resolved. This latest release is one of the most finely polished Linux distros to date, though there are still some quirks: Firefox 3 Beta 5 is the default browser and, while stable for a beta, breaks the usual plug-ins for Firefox 2. The use of the new 'PolicyKit' administration tool and the 'PulseAudio' sound engine has meant some new minor issues have crept in, and one of our biggest gripes is still there — no DVD playback out of the box (there are legal reasons for this, see 'The problem with principles').

However, all up Ubuntu 8.04 is a big step forward. Enough, we think, that it's time to recommend it as a complete replacement for Windows. And since Microsoft is keen to make your next upgrade Vista, such that it has announced the end of XP's support, now is as good a time as any to choose.

Not only can Ubuntu provide the OS and the applications for the tasks you do under Windows, but you don't have to worry about licences, can install it on as many machines as you like, and can get it all for *free* — we can even give it away on the cover DVD of this issue. What a concept: you don't need to pay for an OS, or even the applications you use, ever again. If you so far haven't dipped a toe into the penguin pool, now is the best it's ever been.

Indeed, there's a thread on the Ubuntu forums asking the question 'Who has completely switched to Ubuntu from Windows?' — it's over 3,000 posts long. And this says, of course, nothing about the users of other Linux distributions as well.

THE PROBLEM WITH PRINCIPLES

WHY AREN'T SOME FEATURES LIKE DVD PLAYBACK ENABLED OUT OF THE BOX?

Ubuntu abides by a philosophy of freedom with respect to open source and the packaging of applications.

This means features that might be restricted by copyright or legal issues aren't included by default. For example, encrypted DVD playback under Linux is made possible by the DeCSS code, the distribution of which is restricted by US law. While legal outside the US, it prevents Ubuntu

packaging the decrypting code to playback DVDs. Instead, support can be installed by the user after installation.

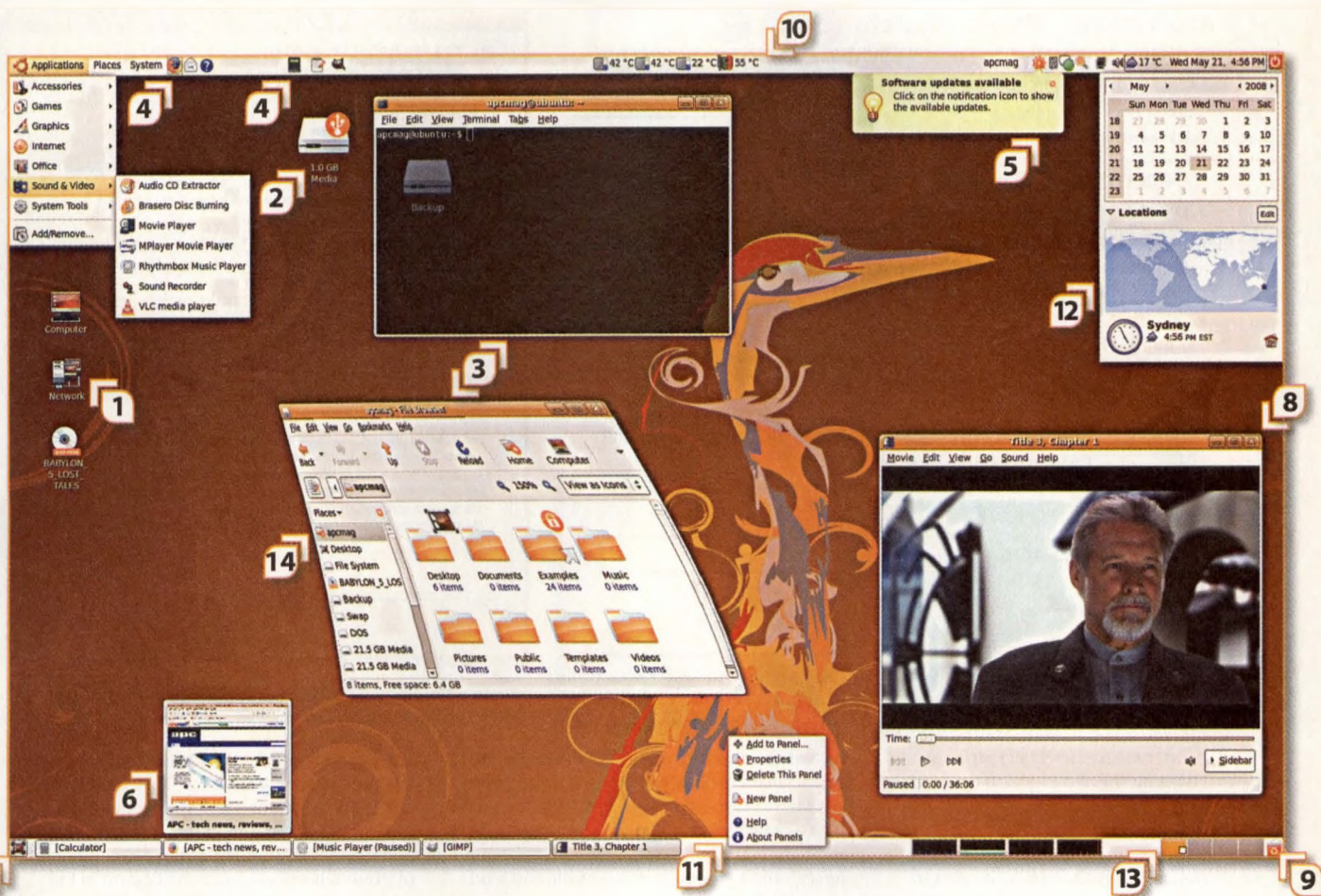
Will this change in future? Hopefully, but until then it's a small price to pay considering, well, you're not spending anything at all!

ENABLING MP3 AND DVD SUPPORT

This isn't too different to installing a codec

pack for Windows such as the Vista Codec Package. In Ubuntu to enable MP3 support click Applications > Add/Remove. Select 'All available applications' next to 'Show', then type MP3 in the search bar. Tick 'GStreamer extra plugins' and 'Ubuntu restricted extras', then Apply.

For DVD playback point your browser to www.medibuntu.org and follow the instructions there.



A visual tour of Ubuntu 8.04

1. Local and networked resources.
2. Attached devices appear on the desktop, like this USB key.
3. 3D accelerated effects including transformation and transparency.
4. Quick-launch icons — new ones can be dragged from menus to taskbar.
5. System tray for programs to provide status and feedback.
6. Running programs appear on the task bar and show their contents when highlighted.
7. Show desktop (minimises or restores all windows).
8. DVD playback with the Totem media player.
9. Trash, waiting to be emptied.
10. Applets provide all manner of feedback and features.
11. Panels are versatile, can be of any size and placed on any edge.
12. Calendar integrates world clock and weather.
13. Multiple desktops, up to 16 if you wish. Roll between them with your mouse wheel.
14. Nautilus file manager, here seen flexing while dragged thanks to 3D effects.

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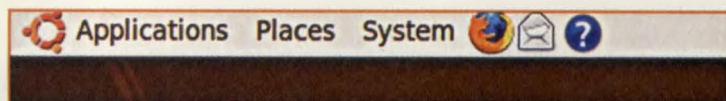
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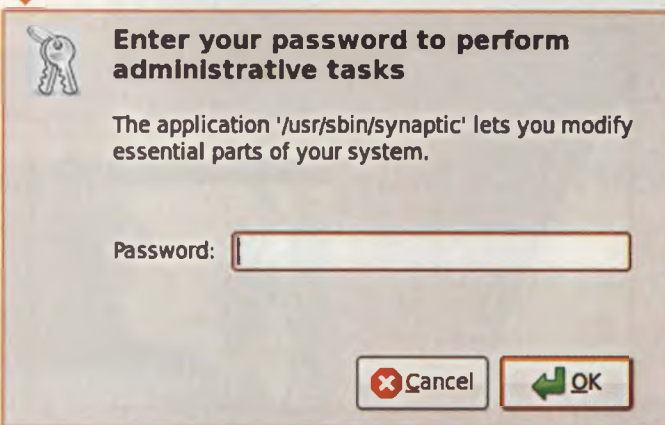
www.freenet-antennas.com/apc



Menus, quick launch icons, system tray and the clock are all familiar in Ubuntu.



An administration password is asked for some tasks, but Ubuntu remembers your access for a time.



And so, on that note, let's take a look at Ubuntu 8.04, with the aim of giving up Windows for good.

WINDOWS TO UBUNTU LINUX

If you've not used Ubuntu before, it helps to know how it compares to Windows for common functionality, and where the similarities and differences lie.

INTERFACE - The basic Windows interface paradigm is preserved, with drop-down menus and dual-taskbars to launch and run applications. Everything from file management to network browsing works as it does under Windows, so you can pick it up quickly. Some tasks are implemented a little differently, such as finding system settings under 'System' instead of a Windows-esque control panel. Just as with Windows, a tray will contain icons of running applications and alert you to any messages — one of the first you'll see on a freshly installed system is a bubble telling you there are some updates you can install.

APPLICATIONS - The essential programs you use; every key Windows application has a Linux equivalent. See table (right).

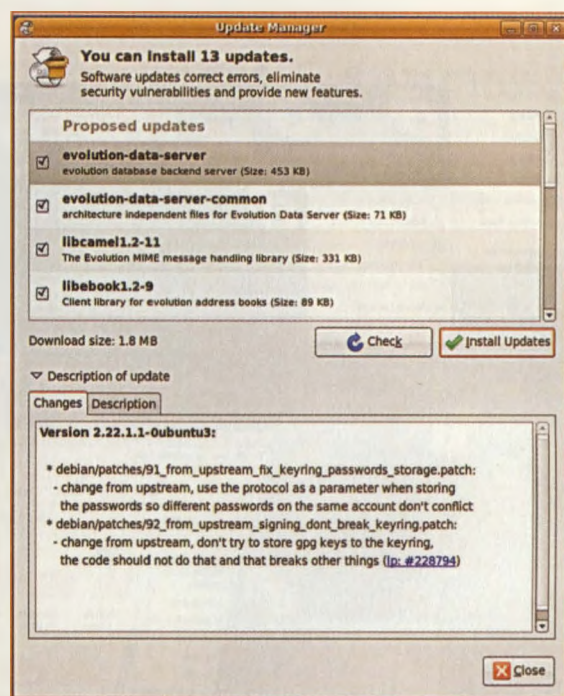
For some Windows applications where you need to purchase additional software, such as Office, there is an equivalent under Ubuntu that comes installed for free. And just as there are multiple alternatives under Windows (such as ICQ for messaging, Firefox for browsing and so on) so too are there multiple choices for Ubuntu,

such as Thunderbird instead of Evolution for email. Finally there are a range of applications installed that you don't get fresh with Windows, such as a BitTorrent client (Transmission), a VoIP application (Ekiga), Audio CD extractor (Sound Juicer), and a comprehensive music and iPod manager (Rhythmbox).

UPDATING - Like Windows Update, any modern Linux distribution, including Ubuntu, comes with its own automated updating software for fixes, new features and upgrades.

COMMON APPS FOR WINDOWS AND LINUX

Application	Windows	Linux
Browsing	Internet Explorer	Firefox
Email	Outlook	Evolution
Office	Microsoft Office	OpenOffice
File management	Explorer	Nautilus
Media playback	Windows Media Player	Totem
Instant messaging	MSN	Pidgin
Graphics	Paint	GIMP
Photo manager	Windows Photo Gallery	F-Spot
Remote desktop	Remote Desktop	Vinagre
PDF viewer	Adobe Reader	Evince

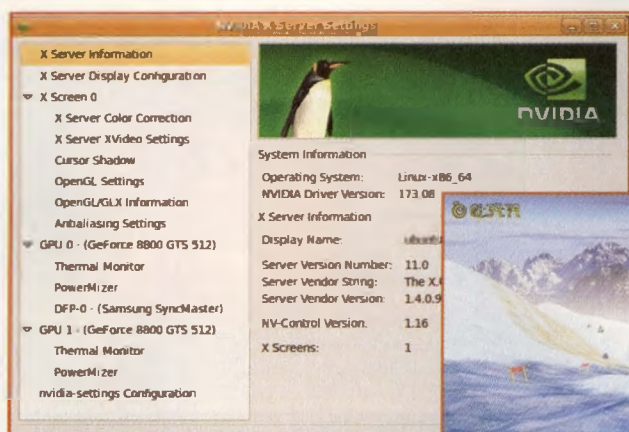


Update Manager will update not only the operating system but all installed applications as well.

The Ubuntu updater is different to Windows Update in two important regards: it updates *all* the software on your system, not just the operating system, and so updates your installed applications as well; and when a new version of Ubuntu is released you can update to the new version on the fly, without installing the operating system again and, of course, without paying for a new version like you would with Windows.

SECURITY - Under the hood Linux builds upon its Unix inheritance and has always utilised a permissions system for user access. Unlike Vista's UAC you can be prompted for an administrator password to make changes to the system, but it 'remembers' your access for a period so you only have to do it once. In terms of viruses and exploits, Linux is under the radar compared to Windows and you don't actually need to run an antivirus or antispysware suite at all. At most you might want to use spam-filtering with your email, which just as with Windows is supported by the email client.

HARDWARE SUPPORT - You don't need to go hunting for drivers as, with the exception of some video drivers for accelerated 3D, all driver support is included as part of the Linux kernel. Even with external drivers such as for video, Ubuntu can fetch and install them for you. Overall the range of hardware supported is more extensive than Windows, but there are still some specific products that lack support.



Ubuntu can install third-party drivers like the Nvidia accelerated drivers for you.



The native Linux game Tux Racer uses OpenGL and features such as shadows, reflections, fog, stencil buffers and FSA.

GAMES - Games are the last bastion for Linux. As a gaming platform the support is there: OpenGL for graphics, OpenAL for sound (both of which some Windows games use), and SDL (Simple DirectMedia Layer) provide everything needed for development, but with Microsoft's investment into DirectX and the Xbox, there's understandably not a big call for Linux games. That said, there are hundreds of games available for Linux, including some of the mainstream titles (such as the Unreal Tournament series), but for the most part it's not an option yet. If mainstream games are your thing, dual-booting gives you the best of both worlds.

FEATURES UNIQUE TO UBUNTU

In addition to the standard features that have their Windows equivalent, there are a number of features unique to Ubuntu that you can't get under Windows:

APPLICATION ARCHIVE - The Ubuntu software repositories include over 24,000 packages you can install at the click of a button. Unlike with Windows you don't need to go searching for specific software online, pay

for commercial applications, deal with the various Windows install and uninstall quirks, handle compressed file formats, or risk installing trojan software on your system. With Ubuntu all applications use the same package format, the same package manager for installing and uninstalling, and all the applications you're ever likely to need can be searched for and installed from within one program, and all free to boot.

DESKTOPS - Ubuntu uses what's known as the GNOME desktop environment to provide the look and feel of your desktop as well as key applications like the file manager. GNOME is just one of many desktop environments for Linux, each with their own style that appeals to different types of users. Two of the more popular alternatives are the KDE desktop (more configurable than GNOME, better for advanced users) and XFCE (a sleek minimalist environment, great for low-end machines). Ubuntu can be downloaded and installed with these flavours by grabbing the Kubuntu (www.kubuntu.org) and Xubuntu (www.xubuntu.org) CD images from their respective hompages.

DO YOU EVEN NEED WINDOWS ANYMORE?

JUST A FEW REASONS TO UPGRADE FROM WINDOWS TO UBUNTU LINUX:

- Runs faster than XP or Vista on the same hardware.
- Familiar look and feel and with many of the same or similar programs.
- No restrictive licences; install it on as many machines as you like.
- No restrictive DRM. 'authentication' with Microsoft, or software that phones home.
- No need to worry about viruses, spyware or other malware.
- Thousands of free applications installable at the click of a button.
- Upgrade to each new release for free, without the need to even reinstall.
- Save money — don't pay for Windows. Office, security suites or applications again.



OTHER DISTRIBUTIONS

We've focused on Ubuntu Linux here because it's one of the more popular Linux distributions and it's the distribution we used in the original Open Source Challenge. However it's most certainly not the only one you can use.

Many distributions, like Ubuntu, now come with LiveCDs so you can try each one out by downloading an .ISO image, burning it to CD, and booting it. There are plenty of great alternatives to Ubuntu such as Fedora, Mandriva, PCLinuxOS, OpenSUSE, Mint and DreamLinux. The best place to see which distributions are available, and which ones are popular, is at www.distrowatch.com.

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▲ Ubuntu's stunning 3D desktop effects put Vista to shame and give Apple a run for its money.

ROLLING RELEASES - With Windows we generally only expect security fixes and minor feature updates through Windows Update; we wait up to a year or more for service packs, and many years for the next complete version — which we then hand over hundreds of dollars to buy. With Ubuntu the Update Manager provides not just fixes and important updates, but completely new versions of software as they are released. This means you can effectively 'upgrade on the fly' as new features are added. Further, every six months a new milestone is released (as Ubuntu 8.04 was) and you can update the latest version without re-installing and, of course, at no cost.

FILESYSTEM ACCESS - Where Windows can't read Linux filesystems, the reverse is not true. If you have hard drives or partitions formatted with Windows' NTFS, Linux can read and write to these for you. This is great for dual-boot systems allowing you to share data between Windows and Linux.

COMPIZ EFFECTS - Windows' Aero interface shows off some of the unique features an accelerated desktop can provide, but Ubuntu takes this to the next level with Compiz. Tastefully the Ubuntu developers

have provided three basic levels of flashy effects and acceleration (see Visual Effects in the Appearance dialog) but by installing the Advanced Desktop Effects Settings program you can access the full suite of Compiz abilities — such as the desktop cube, the Mac OS X-like Expose, and more.

WINDOWS ON LINUX - Even though there's a native Linux application for everything you need to do, there may be legacy Windows applications you want to use as well. You could dual-boot, or you could simply run them on top of Linux. There are two methods for this: WINE (Wine Is Not an Emulator) allows you to run some (but not all) Windows applications directly on the Linux desktop, without even having a copy of Windows. It does this by providing native Linux libraries of Windows functions. Another method is to run a virtual machine on Linux and install Windows into it as a guest — the Linux kernel comes with native support for Intel and AMD virtual machine extensions to provide lightning-fast VM implementation.

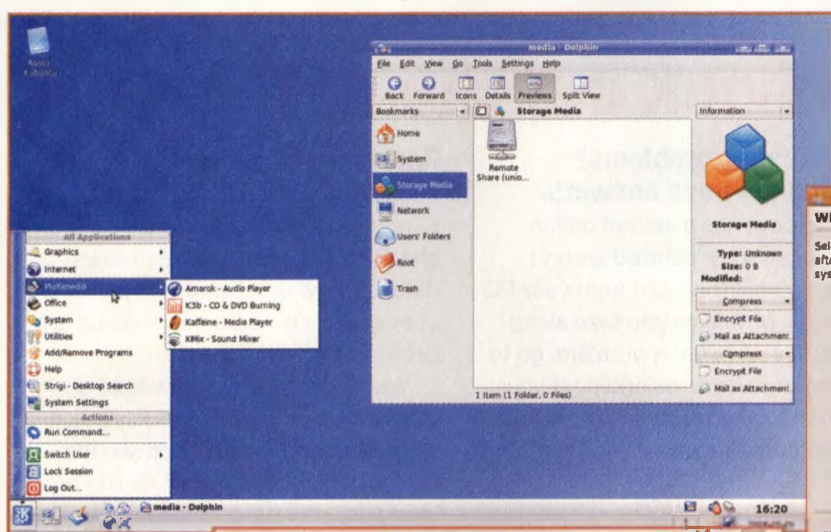
64-BIT SUPPORT - Being almost entirely open source, the applications available for a standard 32-bit Linux operating system are also available for 64-bit, giving you access to

thousands of applications available for Linux in a native 64-bit format. Under 64-bit Windows (XP or Vista) the majority of applications available are still 32-bit only.

TAILORED DISTRIBUTIONS - Much like the other desktop variants, Ubuntu also comes packaged in a range of distributions aimed at specific markets. Some of these include Edubuntu (www.edubuntu.org) for the education sector, Ubuntu Studio (www.ubuntustudio.org) for audio/visual production, and Mythbuntu (www.mythbuntu.org) for media centre PCs.

COMMUNITY - Ubuntu's public forums are filled with helpful users and any issues are usually solved quickly. It may seem a little bizarre, but a lot of people love using Ubuntu, and we're not sure we can find many people willing to say that about Windows.

COST - Did we mention Ubuntu, and all the applications you need, are free? It may seem like a bit of an obvious point to make, but, whereas you need to pay hundreds of dollars for Windows, Ubuntu costs you nothing. Why pay for an operating system and applications when you don't need to?



Kubuntu uses KDE in place of GNOME, providing a different look and feel to the desktop.

Ubuntu lets you know when there are updates to install.

Software updates available

Click on the notification icon to show the available updates.



Installing Ubuntu is simple: it will even set up a dual-boot system for you and migrate Windows user settings.

STARTING WITH UBUNTU

On this month's cover DVD we have included the full Ubuntu 8.04 release, installable as a LiveCD format — this means you can boot Ubuntu 8.04 and explore it before installing it, though some features may be disabled and it will run slower from disc. Installing and using Ubuntu is quite straight forward, but a quick guide on what to look out for follows below.

INSTALLING - The Ubuntu installer will help you make room on your system to dual-boot with Windows, or optionally can completely replace it. Either way, just as when upgrading Windows, it's a good idea to make sure you've backed up any essential data before beginning.

If you do plan to dual-boot it helps to also make sure you have either spare partitions, or enough free space on your Windows drive to create some dedicated partitions for Ubuntu. Defragmenting from Windows first can also help speed the process.

Alternatively, you can try a Wubi install (installs through Windows onto a partition). It has limitations, but it's good for a trial.

Once you start installing, it's straightforward, and you can even continue using the LiveCD whilst it installs. If you wish to migrate user settings from your Windows boot, Ubuntu will offer to do this as well.

How much space do you need? A fresh Ubuntu 8.04 install takes up about 2.2GB, and yes this includes an office suite as well (compare to Windows Vista plus Microsoft Office coming to some 12GB installed). To allow for future

growth, set aside at least 10GB or even 20GB for your Ubuntu Linux boot.

UPDATING - Once installed and connected to the internet, Ubuntu will likely prompt for you to install the latest updates. Click to install them and note that, unless a new kernel is installed (which is rare), you won't need to reboot like you're used to doing with Windows.

By default the updates checked are essential fixes from its main repositories. If you want a wider range of software to install and be updated, click System > Administration > Software sources and make sure 'main', 'universe', 'restricted' and 'multiverse' are all ticked. Then, under the Updates tab, select 'hardy-security', 'hardy-updates', 'hardy-proposed' and 'hardy-backports'.

APPLICATIONS - Ubuntu includes an excellent application browser from the Applications > Add/Remove menu. Next to 'Show' select 'All available applications' and then browse away. You can also have more fine-grained control, or learn more about individual applications, by running the Synaptic Package Manager (System > Administration > Synaptic Package Manager).

PLAYING - Once updated and with some extra applications installed, try right-clicking on the task bars and click 'Add to panel' to add new applets, drag menu items across to the panel to create quick-start icons, check out System > Preferences > Appearance to play with Themes

and Visual Effects, and read up on Ubuntu's documentation.

There's plenty more to explore, of course, so next issue we'll have a special Ubuntu 8.04 Open Source Challenge guide for making the most of this latest Ubuntu version.

SO WHAT DO WE THINK?

All said and done, Ubuntu 8.04 is an example of how Linux has not only arrived as a desktop, but is accessible to all users. There are some rough edges we'd like to see improved in the 8.10 release at the end of the year, but 8.04 is polished enough to replace Windows and never go back. The fact it's free as well is a remarkable achievement of the open source model, and it begs us to ask if Windows is the one that needs to fight for a desktop presence.

With an operating system and applications this good, all which costs you nothing, you have to wonder if the model of paying for a desktop operating system, and thus Windows itself, is obsolete. With the one exception of gaming, there isn't anything Windows particularly offers over Linux, and there's plenty Linux offers that Windows doesn't.

So if you want to be free of the Windows upgrade cycle, want to save money and stop paying exorbitant costs for an operating system (here's looking at you, Vista), want an operating system that doesn't require you to upgrade your hardware just to run decently, and you're tired of being swamped by viruses and spyware, the answer is already in your hands on this month's cover DVD. Enjoy the freedom. **BTTC**

Top 3 reasons to check out the APC web site

Tech news as it happens

We provide you with the overview of the last month in tech in each issue of APC, but for the latest news updates, check out APC's online news. APC's award-winning journalists are on the case every day, reporting news from the biggest events in tech around the world.

We report breaking tech news as it happens, and we always secure the Australian release dates and pricing as often as possible, so you don't have to go hunting for it yourself.

apcmag.com/news

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For technology professionals

APC Pro is the APC that's for professionals looking after the IT needs of small to mid-size businesses. On Pro you won't find stories about MP3 players or consumer entertainment. Instead we cover the technologies that make up the IT back end of your business. APC Pro thinks like a system administrator and only brings you information that's relevant to SMBs.

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APC Pro covers the gear in your SMB's data room: servers, server infrastructure, networking hardware, storage, security and server OSs and management software. Not the products you tend to find on populist consumer web sites — but then, we're helping SMBs, not trying to win Slashdot popularity contests.

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APC Pro might be for tech professionals, but the reality is that many of you who run the IT for small to medium businesses are not formally IT-trained. And even if you are, SMBs need all-rounders who need to know a bit of everything. So, we assume that you may still need step-by-step guidance on everything from mastering Windows Server 2008 to equipping your staff with the right computer gear when on the road.

APC Pro — for when you're running the show



Experts help solve your computing problems

A computer magazine's readers can be one giant helpdesk. If you have a technical problem you just can't solve, chances are another APC reader can.

WINDOWS

GETTING RID OF THE UAC MESSAGE

Q The Vista User Access Control must be the stupidest, most annoying feature ever in a software program. It sums up Vista — full of new features we really didn't need. How do I get UAC off my PC?

Adam

A There are several ways of doing it, but this is the simplest. Be warned, removing UAC means that security on your system is potentially diminished. UAC cautions users when they are trying to carry out a task that requires them to have administrative privileges, so that you don't accidentally make changes that can compromise system function or security.

To disable the UAC, go to Control Panel and type 'UAC' in the search box in the top right. The search will return 'User Accounts — Turn User Account Control (UAC) on or off.'

Click on it to open the UAC window. Untick the 'Use User Account Control (UAC) to help protect your computer' option and click OK.

WINDOWS

VISTA'S DEFRAGMENTATION SYSTEM

Q I've migrated from XP to Vista but I can't find the disk defragmentation tool that shows visually the fragmentation of the drive. Have they dropped it from Vista?

Gordon Ano

A Fret not; the Vista defragmentation tool is already working hard for you in the background. The XP defragmentation tool was often criticised for its slow speed and lack of scheduling, a situation that prompted a healthy trade in add-on defragmentation software for XP. Vista's enhanced security model and the growing demands for a grown-up defragmentation tool prompted Microsoft to



▲ Vista's defragmentation system: the command line defragmentation utility lets you see your disk statistics.

further develop Vista's built-in defragmentation tool to the point where most people simply don't realise that it's there.

To find the defragmentation tool simply type 'Defragment' (or 'dfrgui') in the search bar.

By far the most obvious change over previous versions is the absence of the visual GUI indicating the percentage of file fragments found on the hard disk. The Vista defragmentation service is always running in the background, making any GUI image instantly out of date.

The second major change is that the Vista defragmentation tool is already running on a schedule, which will vary depending on when your copy of Vista was installed. If the PC is off at the time of the next scheduled event, it will run as soon as possible after the machine has been started. This accounts for increased disk activity when the PC hasn't been used for a while, something that has been wrongly attributed to indexing or even virus activity. The schedule can be modified if you suspect that the defragmentation is interfering with your use of the computer.

Disk defragmentation is vital for the smooth running and performance of your PC, and there should be little reason to switch this off.

However, if you need to do this, simply uncheck the option to 'Run on a Schedule' from within the new GUI and remember to run it manually from time to time.

Incidentally, disk defragmentation statistics can be obtained from the command line. Type the following in a command shell (this must be an admin shell) to see a current disk analysis report: 'C:\ defrag c: -a'.

WINDOWS

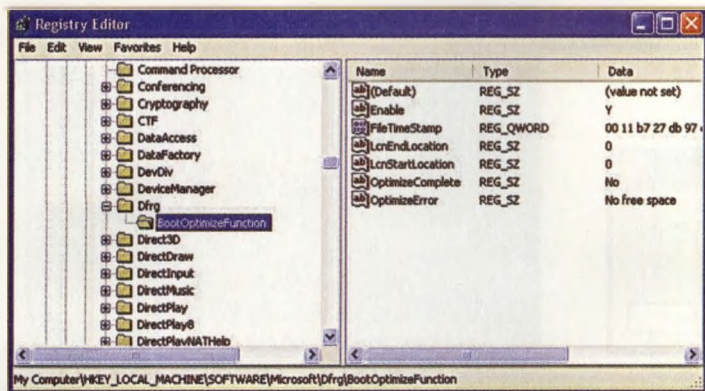
REGISTRY CLEAN SLOWS MACHINE DOWN

Q I recently cleaned my Registry with a freeware utility after my PC was infected with a virus. Now my Windows XP machine is taking forever to boot up. I've re-installed Windows, but there's no change.

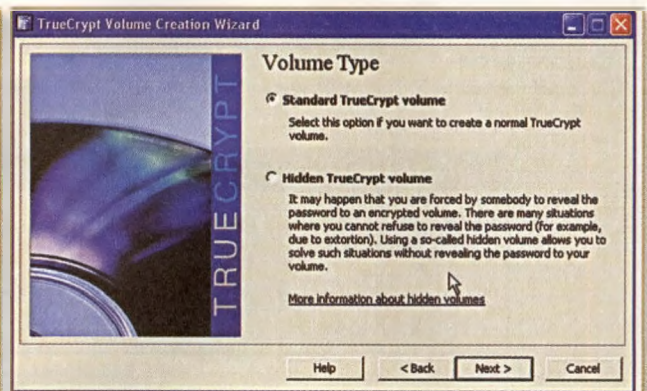
Kevin Peter

A Unless you do a format and re-install, simply re-installing Windows system files won't do any harm but won't do any good either. Without a 'box fresh' installation, the Windows registry is not deleted, which is what you need in order to put things right after your freeware experiment. Following any virus infection I always flat format and re-install Windows from the original media before restoring files from backup. If you don't have any backups, copy your vital data to CD or other medium before flattening the PC and starting over. Then install a quality antivirus solution before copying your data back from CD.

The registry cleaner you employed may have removed Windows' ability to place boot files next to each other on the hard disk. If this has happened and the boot files are fragmented, Windows will have to find the file fragments before starting.



Improved boot times: ensure that Bootoptimize is enabled to keep XP boot performance up to par.



Windows file encryption: TrueCrypt, pictured above, is free and flexible, and it won't tie files to your Windows install.

Remedy this by replacing the missing 'Boot Optimize Registry' value as follows:

Using Regedit, find the key: 'HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Dfrg\BootOptimizeFunction'.

Ensure that the 'Enable String' value is set to 'Y', and then reboot the PC.

WINDOWS

WINDOWS FILE ENCRYPTION

Q I have suffered a major data 'lock out' with XP Pro as follows. A while ago I encrypted data, exported the private key and deleted the key on my PC as I had stumbled across this recommendation on the web. However, I did not fully understand XP's Encrypted File System despite reading almost all of the XP help file! I then later unencrypted the data, re-installed XP Pro and of course encrypted the data again. I recently had to format the drive and re-install XP, so I imported the original key into the personal store. However, I can't access or decrypt any of my data. I now realise that every key is different on each install — but nowhere are there any warnings about this in XP. Is there a way to crack these XP-encrypted files?

Peter Stone

A Sadly, no. By encrypting your data, you are effectively putting it in a safe. If you re-install Windows, you have created a new safe, and therefore you need a new key. You cannot use the old key, because otherwise anyone could plug your hard drive into their machine and use their certificate to try and access your data. Unfortunately, without the certificate for that install of Windows, your files are locked. In the future, we recommend you use an encryption system that isn't tied to your OS, such as

TrueCrypt, and only encrypt truly sensitive data. With this program, as long as you know the password, you can decrypt files wherever you have moved them.

WINDOWS

CREATING SCRIPTS

Q I need to be able to create a new folder structure on a number of Windows PCs in a workgroup. How can I do this without visiting each PC in turn?

Chad Jackson

A If the PCs in your workgroup are inside an Active Directory environment you can use 'Group Policies' to create and manage folder structures and many other management tasks. Without an AD structure, implementing changes such as preparing remote PCs for software rollout becomes a little more difficult, although not impossible.

You may be able to use the Windows Scripting Host (WSH) tool which is built into Windows XP and Vista. WSH received a deservedly poor reputation when amateur hackers found that an unprotected Windows 98 PC could be hijacked using simple scripts, and many IT administrators routinely removed the scripting host from their Windows 98 rollouts. For Windows XP, Microsoft reworked the security surrounding the WSH feature and made many changes to enable scripting functionality without making the host PC vulnerable. It is very simple to disable scripting in Windows XP and Vista (simply remove the file association .vbs) but in some environments scripting can be a useful way to manage routine tasks.

Folders can be created on a remote PC using a very simple script:

```
strComputer = 'computer1'
```

```
Set objWMIService = GetObject _ ('winmgmts:\\  
& strComputer & 'root\cimv2:Win32_Process')  
errReturn = objWMIService.Create _ ('cmd.exe /  
c md C:\Remote_Folder')
```

Replace 'computer1' in the first line with the name of any computer for which you have remote administrative rights. Replace the last line with the command you want executed on the remote machine.

WINDOWS

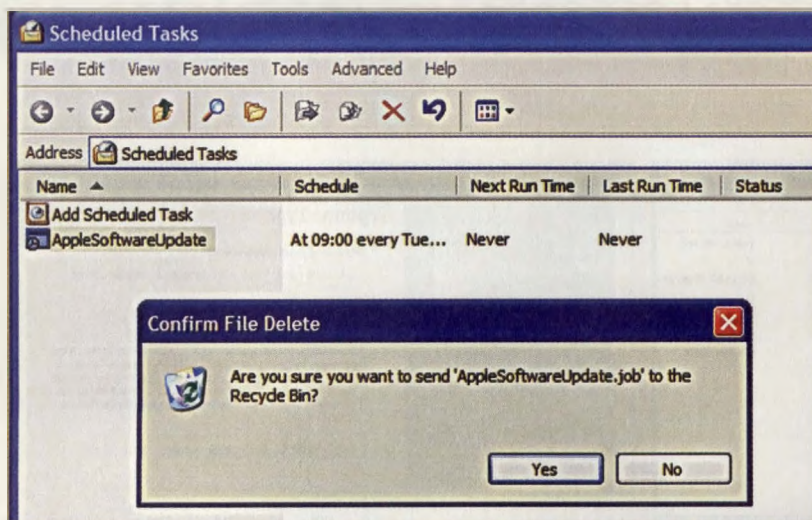
EXPLORER COMMAND LINE ARGUMENTS

Q I need to use Windows Explorer to administrate my server all the time, but when I start Explorer it always takes me to the root of Admin\My Documents. This is annoying because I waste time navigating to the folders belonging to my users. Is there a script that I can use to get to my target?

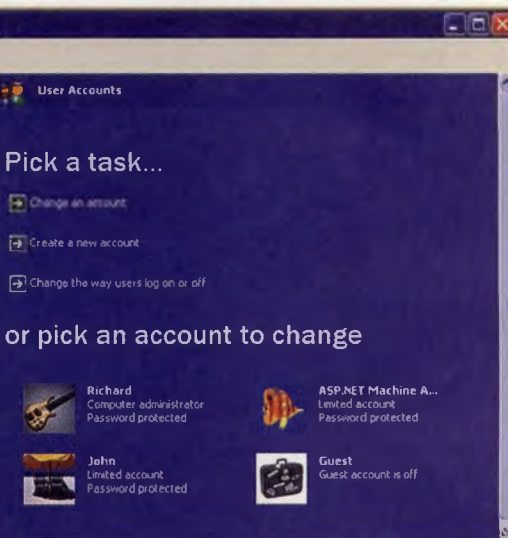
Rosey Mercer

A You don't need to go as far as a script for this. How about a folder containing a list of shortcuts for all of your users? You can add and delete shortcuts as your users come and go, and double-click on a shortcut to take you straight to the home folder for that person.

A simple command line switch can be used to start Windows Explorer in a predefined location. The following line for instance will redirect Explorer to the home folder for a user called John: 'C:\Windows\Explorer.exe /n, /e, /select, C:\Documents and Settings\john\My Documents'.



Temporary administrative privileges: John is a limited user, but if he is provided with Richard's credentials he can run programs in 'Elevated' mode.



Apple's update reminders: if you prefer to update your programs manually you can turn off automatic notifications in the Task Scheduler.

If you wish you can even open the folder with a specific file highlighted: 'C:\Windows\Explorer.exe /n, /e, /select, C:\Documents and Settings\john\My Documents\ test_results.txt'.

Alternatively, start Explorer at the root of a mapped drive or UNC resource: 'C:\Windows\Explorer.exe /n, /e, /root, \\test_results_server 3'.

WINDOWS

APPLE'S UPDATE REMINDERS

Q I keep getting the Apple iTunes and QuickTime software update window appearing on my screen, but I don't want to upgrade every time there's a new version.

This is particularly so when the downloads are normally in excess of 50MB.

I've looked in my Startup folder and searched the Registry for it to no avail. Can you help?

Kristen Bernard

A The reason you can't find where it's being called up is because it's in your Scheduled Tasks. Simply click on Start > Programs > Accessories > System Tools > Scheduled Tasks and select Delete to remove the notifications.

WINDOWS

MICROSOFT WINDOWS UPDATE PROBLEM

Q For some months I have had a problem with Microsoft Update.

When I shut down, it installs the same update 'Security update for Microsoft XML

core Services 4.0 Service Pack 2 (KB936181)' and when I start up again the update shield reappears in the task bar almost immediately. Does anyone know how to stop this?

Don Riley

A It appears this issue is known to Microsoft and is caused by a corrupt system file or a file not being updated correctly. To resolve this problem, follow these steps:

1. Click Start, then Run, type 'cmd' and then press Enter.

2. At the command prompt, type 'ren %windir%\System32\msxml4.dll msxml4.old' and then press Enter.

Note: after you press Enter, you may receive the following error message: 'Cannot find the file specified.'

Ignore this message, and go to step 3.

3. At the command prompt, type 'exit' and then press 'Enter'.

4. Visit the following Microsoft web site: <http://tinyurl.com/2y4bg3>.

5. Download and then install security update 936181.

Rodney Speer (former IT support)

WINDOWS

TEMPORARY ADMINISTRATIVE PRIVILEGES

Q Some of my users need to run programs that will only work when logged on as an administrator. How can I enable them to use these programs while preventing spyware programs from running in the background?

Jeff Ricardo

A While Vista has the advantage of UAC (User Access Control), Windows has no ability to prevent programs from running in the background using the administrator token.

Vista manages this by splitting Explorer in two and requesting that a new token is created for programs that want to run with elevated privileges.

The only way to create a similar situation in Windows XP is to remove your users from the administrator group and provide them with the username and password of an account that's in the Administrators group.

Instruct your users to log in as themselves and to run programs requiring elevated privileges using the 'Run As' option, either by shift-clicking the program icon or right-clicking and choosing 'Run As' from the right-click menu.

When challenged they can use the administrator credentials, while staying in the relative security of their Limited User account type.

WINDOWS

FORCE XP TO ASSIGN DRIVE LETTERS YOU WANT

Q Sometimes when I install Windows XP on a computer with multiple hard drives, or multiple partitions, Windows seems to assign the drive letters at random. Windows itself ends up installing to drive letter D or drive E as the system drive, instead of C. Is there an easy way to force Windows setup to assign the drive letters you want? I know how to change device drive letters after Windows is installed, but this can't be done for the system drive letter.

Duncan Paul

FINDING THINGS QUICKLY IN LINUX

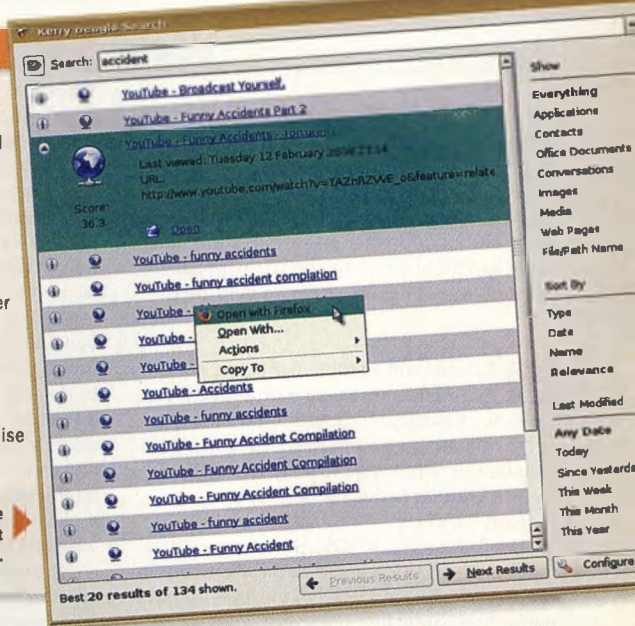
On any operating system, home directories are like a teenager's bedroom — they start off with good intentions but there comes a time when finding something is just too much effort. On the command line there are tools like 'find', but when the GUI is king and users think the command line is for geeks only, Kerry Beagle comes to the rescue.

Kerry Beagle has been around for a while, and on new Linux installations experienced users have either turned it off or ignored it, leaving it for the newbies to use. However, as your system's entropy level increases in accordance with the laws of thermodynamics, things become harder to find. Kerry Beagle works by producing an index of your system as a background process so that when you want to find something, it only needs to search that.

The search process is quite quick and the absence of organisation in your part of the real file system doesn't slow it down. As with any search engine, just type in the search term and click on the Go button. Clicking on the Information button expands any entry, and if you hover the mouse over that result's icon, you'll see a preview of it. Clicking on the result will open it up in the default program or right-clicking on it gives you a menu.

The choice couldn't be simpler: organise your home directory or use Kerry Beagle.

Kerry Beagle, the Linux resource finder, will find for you without boiling the oceans.



A I've had this happen to me as well with installs I've done in the past. The only way I've found, which is crude but effective, is to simply disconnect the other drives when you do the install (ie. only have the drive that you want XP installed to).

This will force it to be C: drive and then you can reconnect the other drives.

Cary Pichler

WINDOWS

VISTA'S ADMINISTRATOR ACCOUNT

Q I've noticed that although my Vista account has administrative privileges, it's not actually an 'Administrator' account. This means I have to elevate many commands to 'Run as Administrator' before I can use them. I tried creating an account called 'Administrator' with the right privileges but couldn't. Do you know how I can become a full administrator?

Barry Dixon

A In versions of Windows prior to Vista, the Administrator account was enabled and created with a blank password during setup. This left the system vulnerable both during and after a Windows installation. To better protect Vista, Microsoft decided that its built-in Administrator account should be disabled by default in all clean installations and upgrades of Windows Vista.

To enable the Administrator account click on Start and go to Programs > Accessories. Right click on Command Prompt and choose the Run as Administrator option. You'll be prompted to approve the action and will then be able to enter the following command:

```
net user administrator /active:yes
```

When you next start Windows, you'll be able to

log into your Administrator account. Unless you have no concerns about other people using your computer, I recommend the first thing you do then is go to User Accounts and give the account a strong password.

WINDOWS

DISABLE THE XP SECURITY RISK MESSAGE

Q I recently freshly installed Windows XP Pro with Service Pack 2 (previously had Service Pack 1). The computer is not connected to the internet and never will be. Unfortunately Windows Security Centre keeps popping up with a message telling me my computer may be at risk even though I have turned everything off. I understand that I cannot remove this program but how can I disable it?

Neil Lofts

A We had several APC readers answer this question. We have summarised the answer as follows in two sections, one for XP, and another for Vista (just in case).

Windows XP

XP's security centre has three so-called 'Security essentials', which are the cause of security alert popups in the system tray. You can turn off the Security Centre completely or you can disable one of the three reasons that may be causing the message.

To turn it off completely:

1. Go to Start > Run, type 'services.msc' and press OK.
2. Scroll down until you see 'Security Center', and double-click it.
3. Click the drop-down (Startup type) and choose Disabled.
4. Click Stop, then OK.

Alternatively, you can disable the options in it.

Disable the Security Centre's Firewall message:

1. Click on 'Recommendations on Firewall of Security Center' (Control Panel > Security Center).

2. Click on checkbox 'I have a firewall solution that I'll monitor myself. Note: Windows won't monitor your firewall status and won't send you alerts if it is off' and click OK.

Disable the Security Centre's antivirus message:

1. Click on 'Recommendations on Virus Protection.'

2. Click on checkbox 'I have an antivirus program that I'll monitor myself. Note: ...' and click OK.

Disable the Security Centre's warning about Automatic Updates:

1. Open 'Control Panel' from 'Start'.
2. Open 'Automatic Updates'.
3. Click on the radio button 'Turn off Automatic Updates and Click OK.

Getting rid of the message in Vista

For anyone who has a similar problem under Vista, reader Tommy Sailing says open the Control Panel > Security > Security Center and click on 'Change the way Security Center alerts me'. Choose 'Don't notify me and don't show the icon'.

This is not recommended to do for the average person, as you won't know the status of your security.

APC reader experts Tommy Sailing, Gary Pichler, Bernard Sinai, Bob Denton, Chad Ledden, Pravin Pradhan, David Pierson, Darren Gibbs and Delan Ahamd contributed to this answer.



WINDOWS

XP PRO SP2 INSTALL PROBLEM

Q On a standalone PC not connected to the web, running XP Pro with SP1, I tried to install SP2 from a CD obtained from Microsoft, because a program asked for it. It installs alright, but it will not boot after the installation. I have never had problems installing OSs or programs before. This one has me stumped. Any ideas?

Peter

A A classic and a problem that had me stumped as an IT techie when SP2 first came out. Basically SP2 made certain changes to the operating system, which led many mainboards to not want to work with SP2 (boards without native support for the Prescott C-0 CPU).

The fix for this is a BIOS upgrade or a patch that can be downloaded from the Microsoft site prior to installing SP2. Having the BIOS upgrade performed before installing SP2 would've prevented this issue. However, the options are as follows:

1. You have a BIOS that can be upgraded using a floppy disk with the appropriate version and a tool to 'flash' the BIOS.

2. Go to: <http://support.microsoft.com/kb/885626>, which contains a rather tedious but effective workaround for this problem that will bring your system back to life.

Sebastiaan Scholtens

WINDOWS

RESERVED BANDWIDTH

Q I recently read that Windows XP reserves some of your PC's bandwidth for its own use. Is this true, and if so can I get that bandwidth back for my own use?

A I would advise you to look at article on the Microsoft web site, <http://tinyurl.com/38mu9>, as it explains the myth. Basically, we're talking about QoS (Quality of Service) in computers that are running Windows XP, which actually refers to bandwidth provided to applications. As in Windows 2000, programs can take advantage of QoS through the QoS APIs in Windows XP. One hundred per cent of the network bandwidth is available to be shared by all programs unless a program specifically requests priority bandwidth. This 'reserved' bandwidth is still available to other programs unless the requesting program is sending data. By default, programs can reserve up to an aggregate bandwidth of 20 per cent of the underlying link speed on each interface on an end computer. If the program that reserved the bandwidth is not sending sufficient data to use it, the unused part of the reserved bandwidth is available for other data flows on the same host.

The Microsoft article also corrects some claims about Windows XP QoS support. 'There have been claims in various published technical articles and newsgroup postings that Windows XP always reserves 20 per cent of the available bandwidth for QoS. These claims are incorrect.'

Jab

LINUX

CONFIGURE YOUR DHCP SERVER

Q I've just bought my teenage son a new computer from which he wants to run his own web server. I can open a port on the firewall to direct his traffic to his machine, but it needs a static IP address. At the moment, he uses the LAN's DHCP server so he has full access to the internet, but he refuses to let me anywhere near his machine to give it a static address or a name. How do I solve this?

Eric Peavey

A Without wanting to get into the domestic politics of teenage households by suggesting that you remind him of who runs the home LAN and pays for the internet, there is a fairly easy way that you can do this without having access to his PC.

You can use your DHCP server to give him a specific IP address, based upon his hardware. He uses your LAN to gain access to the web so you can use a number of tools to find out his MAC address.

First of all, run nmap to scan your LAN and find any responsive machines on it. Run 'nmap -Sp192.168.0.0/24', substituting 192.168.0.0/24 with your own LAN and it'll run through everything within that range, reporting which addresses are responding. Rather than give you just the IP addresses, it will also give you the domain names where it can, so spotting an odd one is fairly easy.

Once you have the IP address, you can scan that machine to find out its MAC address. If the result had been 192.168.0.216, you would run 'nmap -O 192.168.0.216' remembering that you need to be root this time.

This will scan any interesting ports and, if possible, will also try to guess the operating system of the machine as well. In among the output data, you will see the MAC address.

Next, you need to log into the machine with your DHCP server on it, su to root and edit /etc/dhcpd.conf. You need to add an entry like this: 'host orion {hardware ethernet 00:1a:70:90:5f:2e; fixed-address 192.168.0.216}'

Restart dhcpd by running: '/etc/init.d/dhcpd restart'.

From then on, your son will get the new address. Finally, add '192.168.0.216 orion' to the /etc/hosts file, and the job is done — without you even needing to venture into his bedroom.

```
zircon:/home/paul # nmap -O 192.168.1.1
```

```
Starting Nmap 4.11 ( http://www.insecure.org/nmap/ ) at 2008-04-08 11:36 BST
```

```
Interesting ports on sapphire. (192.168.1.1):
```

```
Not shown: 1678 closed ports
```

```
PORT      STATE SERVICE
```

```
21/tcp    open  ftp
```

```
80/tcp    open  http
```

```
MAC Address: 00:0C:F6:0C: (Sitecom Europe BV)
```

```
Device type: webcam
```

```
Running: D-Link embedded
```

```
OS details: D-Link DCS-1000 webcam with firmware 1.06
```

```
Nmap finished: 1 IP address (1 host up) scanned in 17.225 seconds
```

```
zircon:/home/paul #
```

Configure your DHCP server: use nmap to get that all-important MAC address.

SEARCHING THROUGH FORMATTED TEXT

You can use search and replace within Word to clear up formatting as well as standard text. In all versions of Microsoft Word, search and replace is a quick way to alter capitalisation, spelling errors and adjust formatting. It's easy to replace text strings, but what if you wish to remove misplaced tabs, double spaces or line breaks? You just need to open the find and replace window [Ctrl+F] and enter the right code in the box. Using a combination of codes is possible, as is the use of wildcards.

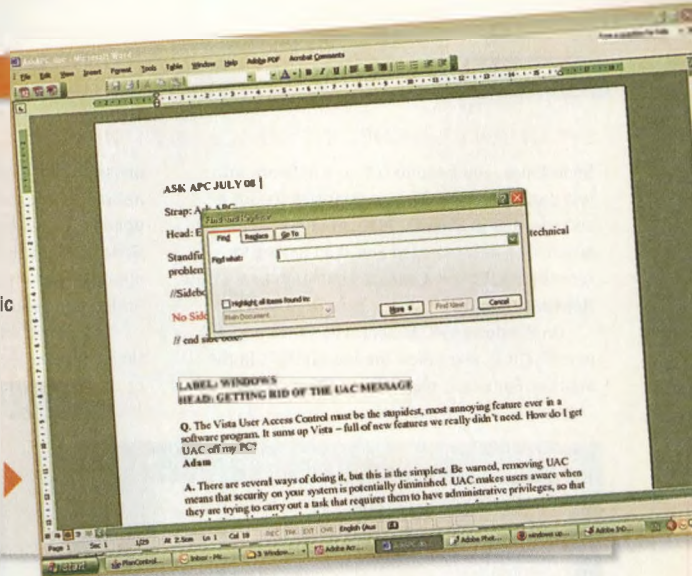
Code Finds:

- ^p or ^13 Paragraph marker
- ^t or ^9 Tab
- ^xxx Find occurrence of specific ASCII

character, where 'xxx' is the ASCII character code

- ^m Manual page break
- ^n Column break
- ^- Dash ('-')
- ^g or ^1 Inline picture or graphic
- ^? Any character
- ^\$ Any letter
- ^# Any digit
- ^f Footnote

Search and rescue: there's more to search-and-replace functionality than meets the eye.



OFFICE

MANAGE OUTLOOK DATA FILES

Q My Outlook data file is in excess of 2GB and is taking a long time to back up. I'm concerned that my data may not be safe. How large can an Outlook data file be?

Timothy Steely

A Microsoft Outlook can be used in a collaborative Exchange (corporate) environment or as a tool for downloading email. When used in standalone mode, Outlook stores email in a PST (Personal Storage) file.

The maximum size for this file is 2GB for Outlook 2000 and 20GB when using Outlook 2003 and 2007. This file size limit is set by the MaxLargeFileSize registry entry: (HLKM\Software\Policies\Microsoft\Office\11.0\Outlook\PST).

This can be changed by editing the string value of the entry. The default value of 0x00005000 produces a maximum .pst file size of 20GB. Another registry entry — MaxWarnLargeFileSize — defines the limit of a .pst file, before Outlook will produce a warning. This is set by default to 0x00004C00 or 19GB. If the size of the .pst file exceeds the limits set in the registry, Outlook will warn first, and then produce an error when an attempt is made to write to it.

Outlook stores all data created by services such as email, calendar and contacts in the default data store. If this becomes damaged, the user can lose years of valuable information. Several strategies can be formed to minimise this risk. A group policy can be used to force the file size down using the MaxLargeFileSize registry value, and split the risk over several files. Or you can use the Microsoft Outlook Backup tool (free download from Microsoft) to create back-up copies of the .pst file when Outlook is closed. Don't store the .pst on a network share,

though. Outlook constantly indexes and refers to the .pst file and this can result in it corrupting the .pst when used over a network.

NETWORKING

MULTI OS NETWORKING

Q At home I have a network of several PCs, plus an Apple notebook. Recently I bought a new laptop, which is running Windows Vista. Although I can connect to the wireless router and use the internet, I can't see any of the other computers on the network. The XP machines can all see each other and the Apple notebook, but not the Vista laptop — while the Apple notebook can see the Vista laptop! What's going on, and how do I share my folders and printer with the Vista laptop?

John Horesham

A The most likely problem is down to the way that Microsoft configures networks for home use. Microsoft uses workgroups, and these have to be given a name. For reasons best known to itself, Microsoft seems to change the name of this workgroup with each version of Windows. On XP, the workgroup is called MSHOME, but in Vista, it has been changed to WORKGROUP. Computers in different workgroups won't see each other on the network. With Vista, you also need to turn on Network Discovery and file and printer sharing in the Networking and Sharing centre.

On your Vista laptop, right-click on the Networking icon in the system tray and choose Network and Sharing Centre. Ensure it's set to private. In the 'sharing and discovery' area of the screen, turn on Network Discovery, public folder sharing and file sharing. For extra security, you can enable password-protected sharing.

To change the network workgroup, right-click on My Computer and choose Properties. Click on the Change Settings link, and then change the workgroup to MSHOME and reboot.

On your XP machine, make sure file and printer sharing is enabled, by double-clicking on My Network Places. Then click on Network Connections in the left-hand pane, then right-click on your network connection(s) in the right-hand pane and choose Properties. Also ensure that all your XP PCs are set to the MSHOME workgroup.

NETWORKING

REMOTE DESKTOP CONNECTIONS

Q I need to use the Windows Remote Desktop feature to connect to my XP PC from home via VPN. I can connect securely using the Windows VPN client, but I can't connect to my PC. Is VPN the problem?

Robin Rankin

A It's unlikely that your VPN connection is the reason that you are unable to connect to your PC. A VPN (Virtual Private Network) is a secure connection created between the client PC and the remote system using a tunnelling client. This can either be the default VPN client supplied with Microsoft Windows or a third-party client. A VPN is necessary when your IP traffic (which is inherently insecure) must be private, usually for business purposes. The most common application for VPN is to create a private tunnel through a public network such as the internet. The client CED (Customer Edge Device) must be carefully configured to meet the questions posed by the PED (Provider Edge Device) at the gateway between the public and private network, usually at the workplace. When the PED is satisfied that the CED is bone fide, a logical data tunnel is made to the remote CED, which for the duration of the session is a node on the private network — just as if it were physically located on the company premises.

This is where your Remote Desktop application is having an issue. When the VPN tunnel is in place, your remote PC is assigned a



TIP...

NETWORKING

SET UP AN ETHERNET INTERFACE ANY TIME YOU NEED IT

Sometimes, you need to set up a network with just one other machine — perhaps to try out a server or test a firewall. Instead of reconfiguring an existing network card and then having to reconfigure it back again, it's easier to use a USB Network adaptor.

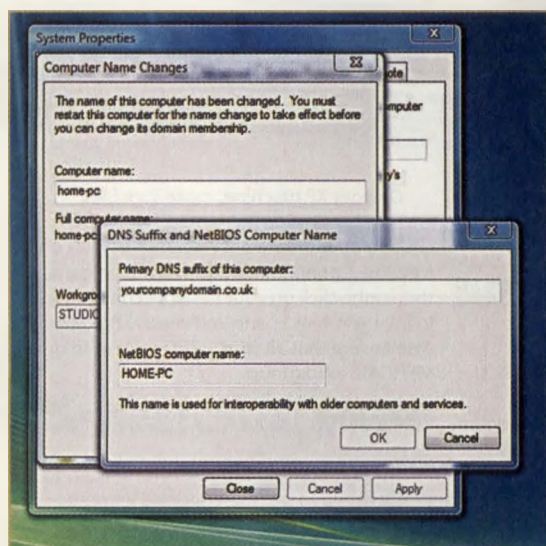
On Windows (98, Millennium, 2000 and XP), just plug it in and follow the instructions in the manual. For Linux, plug it in and type in the root

password once it's been detected. When the network card configuration overview window opens, select the card and click on Edit. Under the General tab, select the firewall zone that is most appropriate for your needs and then, on Device Activation, select On Hotplug.

This means that at boot time — when most of these devices are set up by the boot script — an error message won't be created if the device itself

isn't plugged in (as opposed to just the network connection).

Under the Address tab, you can set the address and so on. Note that before you type in a static IP address, the Configuration Name starts off as the MAC address. You might want to make a note of it, although you can always get it from `ipconfig` later if you want to. Finally, click on Finish and everything runs beautifully.



Remote desktop connections: edit system properties to access your PC remotely.



Free boost to wireless: using the free Windsurfer template, you can construct your own wireless signal reflector for just pennies.

private IP by the PED system. Additionally, your remote PC needs to be a member of the same domain that the other machines in your company are members of. Without this, connections to 'LAB-PC' will fail, as the network simply doesn't know which domain 'LAB-PC' is a member of. To avoid this issue, make your home Vista PC a member of your company domain in Vista System Properties.

NETWORKING

FREE BOOST TO WIRELESS

Q Since moving to a new house, my wireless router has been operating at much lower signal strengths and speeds than previously. I suppose I could buy a wireless repeater, but wondered if there was anything else I could try to save the cost of buying this hardware?

Scott Palmer

A A repeater would help a lot, but another option is to elevate your router to achieve the coverage you require — for example, you

could try running telephone and power leads up into the loft and basing it there.

However, if your router is at one end of the house (which it sounds like it may be from your description), there is also another possibility you can try — if you don't mind a bit of *Play School* style cutting and gluing.

A parabolic reflector used for transmitting will concentrate a signal and, instead of sending it out in all directions, it will be beamed in one direction according to the curvature of the reflector. The same goes for reception (as with a satellite dish), where all the signals arriving at the reflector are concentrated on the receiving antenna (or LNB in the case of satellite).

It turns out that regular aluminium foil makes a great reflector for Wi-Fi, the only problem being to curve and locate it correctly. Thankfully, the following web page features a template image that you can print and cut out to build a reflector they call the 'Windsurfer': <http://tinyurl.com/5hwr2h>.

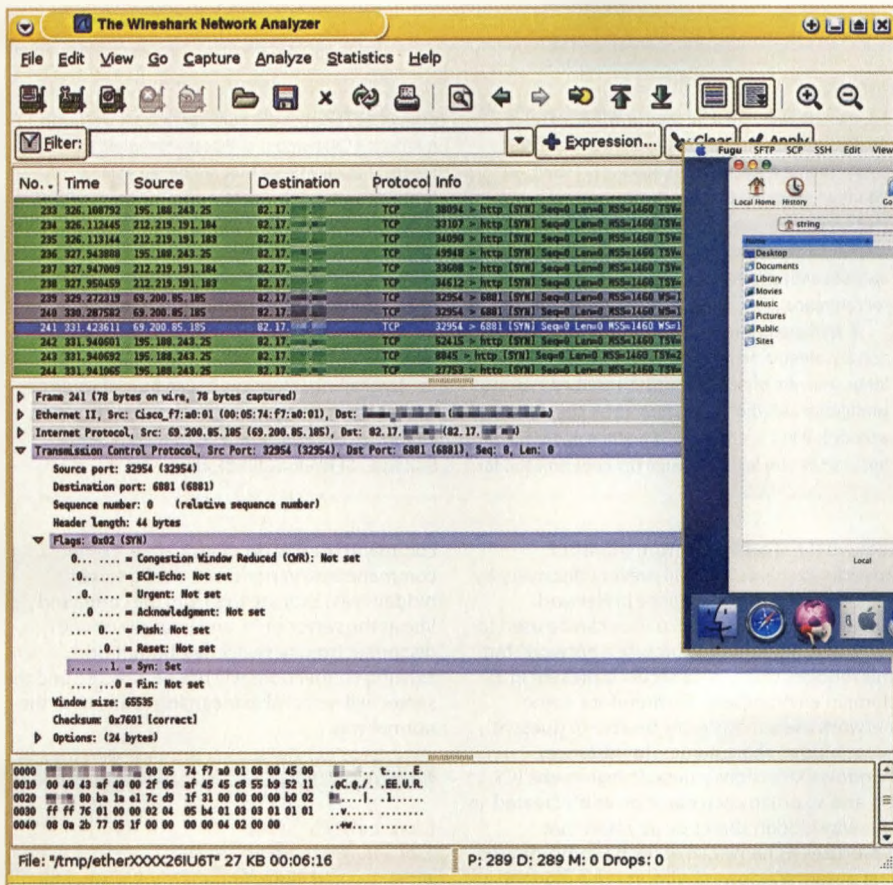
Copy the image into a paint program and resize it to your requirements (the bigger, the better the increase in signal strength you should

see). When resizing just note the square that says 'Keep Square' and keep it square to ensure maximum results.

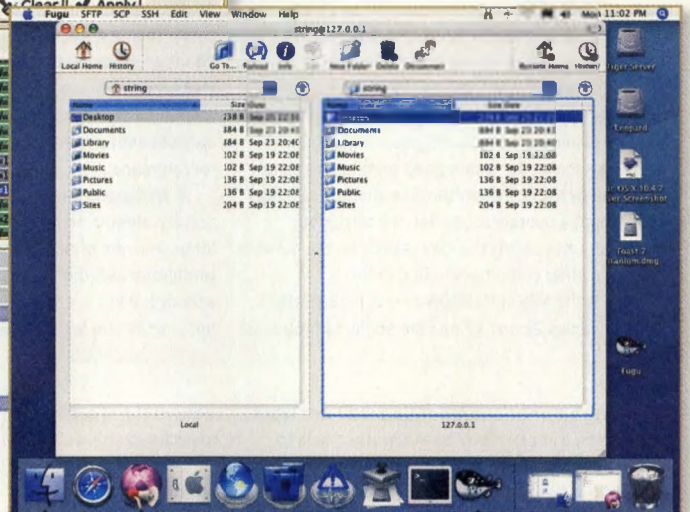
Once printed on the thickest paper or card you have, cut out the two shapes and glue aluminium foil to the lower, rectangular one. Use a craft knife to cut the six slits shown in the bottom shape and the two plus-sign-shaped slits in the upper one. Next, insert the tabs in the upper shape into the slots in the lower one — you'll have to curve both shapes to make them fit. As each tab is slotted, tape it to the back to help hold it in place.

Once completed, you'll have something that almost looks like an old-fashioned boat sail. Just push it onto the antenna of your router, poking it through the two plus shaped slits and, when you access your Wi-Fi network, you should see a signal gain of up to 9db (according to the Windsurfer's designer). If your router has two antennas, you need to make a reflector for each to achieve the best results.

If you can increase the size of your reflector(s) by a factor of two, you could see gains of up to 12db. We tried the project out for



Sniff the net: a sniffer displays the packets you should see on your LAN as well as those that should never get near it.



Use the option 'Connect using a different user name' in Map Network Drive to connect to Mac servers on a PC.

ourselves to see if it worked, and in a very simple test achieved at least a one bar increase in signal strength (as reported by a Windows XP laptop) in a variety of locations.

NETWORKING

SNIFF YOUR NETWORK

Q I occasionally see firewall reports of a port scan that's been blocked, but I'm curious to see what's actually going on. Is there any way of seeing what my firewall is filtering out?

Eric Landolt

A In order to look at your network traffic, you'll need a packet sniffer. A packet sniffer is a network tool used by administrators to look at the traffic on your network and, contrary to popular belief, there's nothing illegal about them. One of the easier ways to look at your network connection is to get a Linux/UNIX machine, give it the IP address that your firewall protects and let it monitor the traffic.

First, reconfigure a spare network card so it has the same IP address as your firewall — remember to make sure your machine is protected by your software firewall. You can get

your IP address from your firewall or you can look at sites such as www.whatismyipaddress.com. Next, open up a console as root and type 'ifconfig eth1 xx.xx.xx.xx', substituting 'eth1' with the network card name and 'xx.xx.xx.xx' with your external IP address. After that, unplug your LAN from your modem and plug in your network card using a crossover patch lead.

Launch a program such as Wireshark and monitor your modem. You probably won't see any traffic for other users on your ISP's subnet, even with the card in promiscuous mode, but you will see port scans, pings and anything else that's going on. When you've finished, remember to put everything back the way it was.

NETWORKING

LOGGING ONTO A MAC SERVER

Q I regularly need to connect to a Mac file server using a mapped network drive. Even though I use the username and password that I've been given, I still can't connect. The network administrator is used to Macs and tells me that the password I've been given is right but I can't connect to his server.

Tony Kennedy

A Outside of a directory environment, either Active Directory or any other flavour, managing server logins soon becomes a nightmare. Windows requires every user to authenticate after starting the computer using a valid desktop username and password. If there's only one user and that person is a member of the 'Administrators' group, then Windows will not produce the log-in prompt and will use the stored password for desktop logins, but will prompt for remote connections, such as a Terminal Services request.

When connecting to other systems such as a file server, Windows uses log-in details called 'cached credentials' when responding to requests for authentication. If the cached credentials do not match with the username and a password known by the remote system, then the log-in request will be refused.

To present an alternative username and password it is necessary to use the option 'Connect using a different user name' in Map Network Drive (right-click over My Network Places or 'My Computer' to map a network drive). Enter the credentials to be presented when connecting to the server share. Often, when connecting to resources stored on servers using the UNIX operating system, even



TIP...

NETWORKING

MINIMISE NETBT TRAFFIC

In a workgroup, a large number of hosts means a huge amount of network chit-chat. XP and Vista computers are often used in Workgroup environments. A workgroup environment is a LAN without a domain controller. In this environment all computers have peer relationships; no computer has the role of managing the workgroup computers. Services such as file sharing and printing are simply managed by the computer that the share is running on. Without a domain controller, the workgroup computers must advertise themselves on the network to enable other computers to find them.

This is the role of NetBIOS over TCP/IP (NetBT). Every Windows 2k and XP has the ability to broadcast

hostnames over TCP if no DNS or WINS server is present on the LAN. XP first searches for a DNS server then a WINS server. If nothing is found, Windows sends up to three name query request messages on the local subnet. Other PCs on the LAN respond with a name broadcast and names are subsequently added to the XP NetBIOS name cache for reference at a later stage.

A workgroup can contain hundreds of PCs and servers. Hostname resolution by NetBIOS generates large amounts of network traffic, resulting in a workgroup LAN that can appear to be slow for other services. What's required is a method of dividing hostnames into logical groups (by departments, for

example). This reduces name broadcast traffic by restricting the number of PCs that respond to requests to only those that are on the named NetBIOS scope. This method is called the NetBIOS Scope ID. NetBIOS Scope ID can be configured at the DHCP server (if available) by configuring DHCP server option 47. The Scope ID can also be set at each PC by configuring the registry key; `KEY_LOCAL_MACHINE\System\CurrentControlSet\Services\Netbt\ScopeID`.

Alternatively, the scope ID can be configured to mirror groups of computers. For instance, PC1.ART, PC2.ART, SERVER.ART and PC1.SCIENCE, PC2.SCIENCE, SERVER.SCIENCE and so on.

presenting alternative credentials may not work. Sometimes, the only way to authenticate is to use the same desktop log-in details (username and password) at both client and server.

Windows will not prompt for log-in details if there's just one user in the local account database.

NETWORKING

HIDING A WHOLE PC

Q We run a mixed bag of Windows Vista, XP and even 98 computers in our shared LAN. Some of our users like to dabble and have got into trouble hacking PCs used to share work folders. Is there a way to hide a computer from the network but still share folders?

Clarence Fillmore

A Windows will create a hidden share if the name of the share is appended with the \$ symbol as the last character. The '\$' symbol will

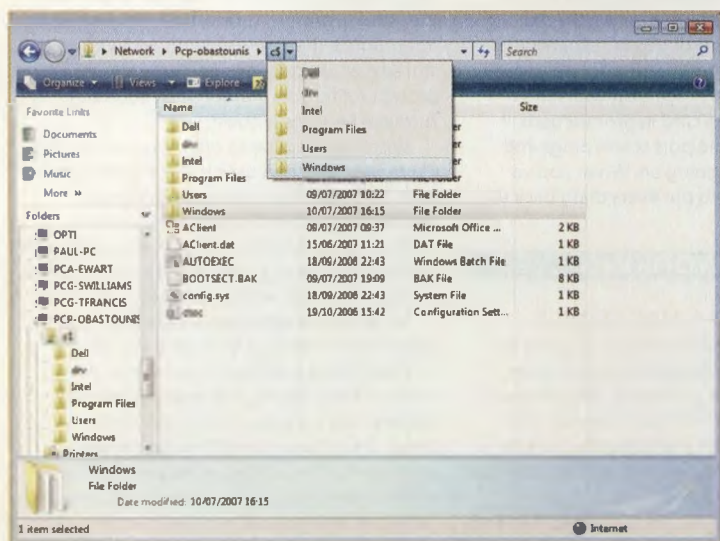
remove the share name from the list of advertised shares and will prevent discovery by casual browsing, for instance in Network Neighbourhood. Group Policies can be used to remove users' ability to browse a network, but this requires that a 2003 server is present in a domain environment. Furthermore, some network users may simply be able to guess at some hidden share names; for instance, Windows XP assigns a default sharename (C\$, D\$ and so on) to each partition as it's created. In this way hidden shares on any host that advertises its name can easily be compromised. In a purely Windows environment a hidden share is effectively invisible, but this well-known technique won't stop a determined dabbler. For once inside the network it's a simple matter of booting with a live Linux CD (Ubuntu, Knoppix or Puppy) and using 'smbclient -l //myserverpc' from the command line to reveal the hidden shares. Disabling XP broadcasting PC names in this situation becomes doubly important. The

command used to do this is part of the net command instructions: 'net config server / hidden: yes'. Execute this from the command line at the server or PC and your server will disappear from network neighbourhood. Existing connections will not be affected and the server will respond to incoming requests in the normal way.

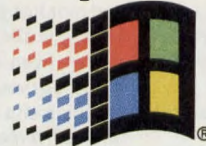
INTERNET

LIMIT KIDS' TIME ON MSN MESSENGER

Q I would like to know if there is any way of limiting MSN Messenger usage by time. We have teenage children in the house and I am able to limit the number of hours of internet usage through Net Nanny. But although it's possible to 'pause' web access through Net Nanny, MSN access is not affected. Ideally, I would like to have in place a control that limits MSN usage per day to a certain limit.



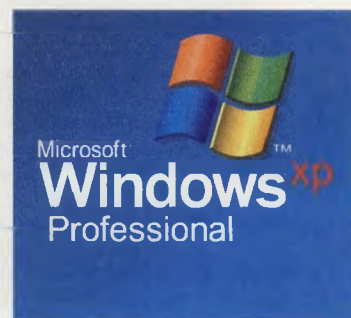
Designed for



Microsoft®
Windows™98



Windows Vista™



◀ Hiding a whole PC: hidden shares can be either an aid to productivity or a security problem.

Better still, if the hours of access can be controlled too.

Danny

A1 There are lots of tools available to control application access by time-of-day, but the easiest solution would be to create an appropriate firewall rule. I use Kaspersky Anti-Virus which has a highly configurable firewall, including enforcement of time-of-day limits for any application. Kaspersky also allows access to the firewall settings to be locked down by password, making it very difficult to circumvent the restrictions. You won't get those options in Windows Firewall; you need a commercial application to provide such functionality.

Bart Henrick

A2 I have nothing but praise for a program called 'Chaperone' by css-software. You can say how long the computer can stay on (and between what hours), as well as set rules for individual programs like MSN and also the internet in general. I found it best to negotiate with my 15 year old (at the time) and agree on say, computer from 3pm-9pm weekdays, with MSN from 7pm-9pm. On weekends it was longer. It's totally configurable. Best practice (for everyone) is to make sure the kids are not local administrators on the computer, but this will still work even if they are admins and try and uninstall it. It's a great product and not widely known. Just looking at the web site now and it's come a long way from when we used it: www.pc-chaperone.com. Ps: I am not associated with the company, just a really happy parent!

Cam Mackay

INTERNET

FIREFOX'S MEMORY HUNGER

Q When I use Mozilla Firefox I notice that the remaining physical memory available to

other programs is almost all used up. Why is Firefox so memory hungry?

Alice Elder

A Releases of Mozilla Firefox before 2.0 did have a well-documented memory leak issue that has now gone away. However, this isn't to say that it doesn't like to use physical memory. It's common to see Firefox consuming 50 to 100MB of memory. This is because every graphical element that is downloaded by Firefox is held in cache, because Firefox is keen to deliver the kind of browsing experience that you deserve — at the expense of other programs running at the same time.

Managing this behaviour in Firefox requires some manual editing of Firefox preferences which are noted in a plain text file called 'prefs.js'. The location of this file varies between operating systems. In Windows Vista, this file is contained in the 'default' folder under the 'Roaming' folder in the 'Users' tree: C:\Users\John\AppData\Roaming\Mozilla\Firefox\Profiles\xxxxx.default.

In Windows XP, it's in Documents and Settings: C:\Documents and Settings\John\Application Data\Mozilla\Firefox\Profiles\xxxxx.default.

Load 'prefs.js' into notepad and add the following line (it doesn't matter where in the file you add this new line).

```
'browser.cache.memory.capacity' '-1'
```

This entry will cause Firefox to use just a portion of the available memory for graphics elements and so on, leaving additional memory for your other running programs. If you are interested in tweaking Firefox, type 'about:config' into the address line of any tab.

The preferences file will load without requiring manual editing with Notepad.

INTERNET

AUTOMATED DNS SCRIPTS

Q I need to automate changes to my 2003 DNS server. Can I do this with a script?

Jack Tims

A The Windows Server 2003 DNS GUI is perfect for most applications. However, if you need to automate changes, such as providing change or adding access to system delegates without granting access to the GUI, then a script is required. The key to using scripts to automate DNS is a little-known command line tool called DNSCMD. Install DNSCMD as part of the Windows Server 2003 support tools found on the Server 2003 distribution CD. Once installed, DNSCMD may be run from the command line: the first command below lists all records in the zone and the second creates a new record (in this case my server1.virtual.local DNS):

```
C:\dnscmd server1.virtual.local /ZonePrint  
virtual.local
```

```
C:\dnscmd server1.virtual.local /RecordAdd XP3  
A 192.168.0.12
```

There are plenty of useful scripts available to download for this useful tool. DNSCMD can be run from any Windows XP or Windows 2000 PC, which is a domain member and has the Server 2003 support tools installed. Incorporate these commands into batch files/scripts of your own.

HARDWARE

BARCODE SCANNER FOR DVDs

Q I'm trying to source an application for a customer who wants to use a barcode scanner to catalogue a fairly extensive collection of DVDs. The problem is that all the apps I've found so far totally ignore Region 4 discs, so

TIP...

INTERNET

SAFETY CHECKS FOR ONLINE SHOPPERS

It pays to be ultra careful when choosing to buy things online. Shopping online is a great way of saving cash right up until you run into a scam and find you've been fleeced by criminals. There are, however, several steps you can take to ensure you don't get ripped off. Firstly ensure your antivirus software, operating system and browser are fully up to date with the latest patches and upgrades. When you begin an online session which will culminate in a financial transaction always type the site's addresses into your browser yourself. Never click on a link in an email and never follow a link from another web site. Criminals commonly try and tempt users onto fake sites designed to look like popular shops and banks. When there, the idea goes, you'll enter your banking details and they take you for a ride — it's a practice we all know as phishing.

If you're visiting a site you've never shopped on before have a look for a physical business address and telephone number and if you can't see these details, move on. If you still smell a rat, try running a Whois search (www.whois.sc) and check the physical address of the online shop and its web site are the same. It is also well worth double-clicking on the padlock icon in the bottom right of your browser to check that the SSL certificate details tie up correctly.

If you do spot a problem, be a good citizen and report it. If you find an iffy site purporting to be that of a bank, tell the real bank. If it's a dodgy shop, tell your ISP. Finally, always pay with your credit card, as, if something does go wrong, you should be afforded a degree of protection from your bank and consumer credit acts.



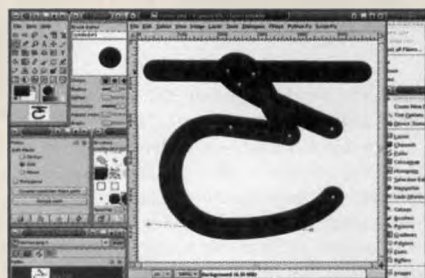
Checking a site's SSL certificate is recommended before buying online.



TIP...

GRAPHICS

CREATING HOME-MADE SPECIAL FONTS IS EASY WITH THE RIGHT TOOLS — AND IT WON'T COST YOU A PENNY

**1 Design it**

Creating special font glyphs can prove to be a problem — you can either design them by hand or use an image processor. For frequently written characters, it tends to be a bit easier to get it right if you write them down and scan them, using that as your guide for a path. Once you're happy with it, save it as a PNG.

**2 Load it**

Next, load up FontForge (<http://fontforge.sourceforge.net>). In an existing font or a new one (if you just want to try this out), double-click on an empty glyph of your choice and then click on File > Import and then select your glyph's image file. You can scale and move it by selecting E > Back and dragging the image's extremities.

**3 Scan it**

Finally, click on Elements > Autotrace to get the program to outline the glyph. If it has been overzealous with the points, you can clean up the outline with Overlap > Remove Overlap or Simplify > Simplify More... You can add effects such as outline, shadow, wireframe and so on. When finished, generate the font as OpenType and try it out.

each disk has to be manually entered. Have you run across an application that will do this? All disks are legal, with no 'backup copies,' etc.

Mark Johnston

A Movie Collector, from Collectorz.com (www.collectorz.com/movie/) does the job without the need for a barcode reader. I use it for doing my CDs, although without using the barcode reader. I just enter the CD into the drive and it reads it and then matches it from the database on the internet.

Max Schafer

A The quickest way to remove it is to use the msconfig tool to disable it running on startup. Click on Start, then Run, and type in 'msconfig'. Click OK, and you will get a screen with six tabs. Pick the Startup tab, and look through the second column, called Command. If you see anything with the words 'Panasonic' or 'Lumix' in the path, it is likely that. Simply untick them all, and click OK. The next time you reboot, you will not have the program launching. A box will appear after rebooting — tick the checkbox and it won't appear again.

David Ross Smith

A The file thumbs.db is used by Windows to store copies of all the thumbnails it creates for folders displayed using Thumbnail View.

Normally, you won't see these files unless you have enabled the viewing of hidden operating system files. If you don't actually need access to these files, open any folder and click on Tools > Folder Options > View, followed by checking the box titled 'Hide protected operating system files'.

On the other hand, if your PC is very low on disk space and you would rather Windows didn't create these files, then you can select Start > Run and type 'gpedit.msc' and click on OK to open the 'Group Policy Editor'.

On the left, go to User Configuration > Administrative Templates > Windows Components > Windows Explorer and double click on 'Turn off caching of thumbnail pictures'. Now, click on 'Enabled' followed by 'OK'.

In future your computer may take longer displaying the contents of folders but you

WINDOWS

PREVENTING A PROGRAM LAUNCH

Q I have a program called Panasonic Lumix Simple Viewer. Every time I boot my computer it launches at start-up. I've looked through options and settings but it seems there is no way of disable it from launching at start-up!

Edmond

GRAPHICS

CACHING IMAGE THUMBNAILS

Q What exactly is the thumbs.db file that I seem to keep finding in folders all over my hard disk?

John Stotts

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will regain all the disk space the thumbs.db files were using.

GRAPHICS

SCALING LARGE IMAGES

Q I regularly print out a large puzzle image from Internet Explorer so that I can take it with me on a long weekend when I'm away from my computer.

The puzzle used to print fine, but now I have a new computer running Vista the same image runs off the right-hand side and the bottom, rendering the printout useless. How do I get it to print out the whole puzzle?

Morgan Staner

A This problem used to occur when people bought a new monitor and changed the screen resolution, because Internet Explorer would then alter the size of the printed image so that it was bigger.

However, you can get around this without changing resolutions by going into the 'Print Preview' options. Click on the down-arrow to the right of the 'Printer icon' on the toolbar, and then select 'Print Preview'.

In that view, you have the option to adjust the page margins by dragging the markers that appear just outside the edge of the page (you need to have the page in full view to do this) or you can change the scale of the image.

Just select 'Shrink To Fit' from the drop-down menu and your image will fit on the page. A print resolution of 300dpi and a scale change of a few per cent will not cause moiré-like banding on the printout.

HARDWARE

WHY DISC IS SMALLER THAN ITS ADVERTISED SIZE

Q Recently I bought a second hard disk of 160GB. I put it as master, but after the installation of XP Pro, it only shows 128GB. The system partition is FAT32, and the rest of it is in NTFS. Is this normal?

Ricky

A1 Sounds like you made multiple partitions on your HDD, which is why you have both FAT32 and NTFS partitions. One way to fix it is to wipe the drive and start again and only have one single NTFS partition. If you have data on the drive already and don't want to go to the hassle of a reload here are another couple of ideas.

First convert the drive to NTFS, by going to the DOS prompt and typing: 'convert c:/fs:ntfs'. It will prompt you with a message that it will be done on next restart. Say 'Yes' to that and reboot. Once the drive is converted, you should have two NTFS partitions. The two combined should equal 149GB which is the total amount of usable space on a 160GB drive. If you need one single partition, you would need a partition manager program to combine the two. XP is not advanced enough to do this by itself.

Cary Pichler

A2 Go to the web site of your motherboard brand and download the latest BIOS update for your motherboard. If you don't have the motherboard's support CD also download an update utility (for a Windows environment is recommended). The problem is most likely that the 160GB HDD came out after your motherboard was manufactured and the BIOS needs to be updated to recognise more than 128GB. This solution is also good if you get CPUID error messages etc. after upgrading to a faster CPU or building a PC.

Terry Hogan

HARDWARE

THE RIGHT RESOLUTION

Q I have an HP f2105 21in widescreen monitor which I've connected to an HP Pavilion PC. The monitor is supposed to support a top resolution of 1,680 x 1,050 pixels, but when I try to select this resolution using Display Properties > Settings it's not available as an option. When I click on the 'Advanced' button and look at the 'Monitor' tab it says I have a 'Default Monitor' connected and my chipset is Mobile Intel(R) 945GM Express Chipset Family. Both items are from HP so I would have

thought they would recognise each other. Can you help?

Leslie Mayton

A For some reason, although your monitor is meant to be a Plug and Play-capable device, it appears not to be recognised as such by Windows. Whenever I encounter problems such as this I use the invaluable program PowerStrip (www.entechtaiwan.com/util/ps.shtml). It provides advanced multi-monitor, programmable hardware support to a wide range of graphics cards, including your 945GM.

Once it's installed and you've rebooted, you'll find a resident icon in your System Tray. PowerStrip is a powerful program that lets you tweak options you wouldn't normally have access to. You may wish to set a System Restore Point (Accessories > System Tools) so if anything goes wrong you can boot up into safe mode and restore your system. Now, right-click on the PowerStrip icon and select Display Profiles > Configure'. The program will pop up and tell you all about your current graphics configuration. Click on the button that is labelled 'Advanced timing options...' and then on the new button labelled 'Custom resolutions...' to see all the possible resolutions available for your monitor.

Many of these simply won't be supported by your monitor. However, as long as you're certain that your monitor can handle a particular resolution it's worth seeing if your chipset's 1,680 x 1,050 modes shown. Most likely you should choose the one called '1,680 x 1,050p (LCD)' and click on 'Add new resolution'.

If the program has any doubts you'll see a warning and be told you have to reboot your PC to try the new mode out. This is why you made a System Restore Point; if the new resolution isn't accepted by your monitor after the reboot, reboot again and hit F8, select 'Safe Mode' and then select 'System Restore'.

It's worth thoroughly exploring PowerStrip because among its many other options you can directly read all of a Plug and Play monitor's capabilities and create a custom monitor driver uniquely suited to almost any display.

TIP...

HARDWARE

INCREASE TYPING ACCURACY BY RECONFIGURING YOUR KEYBOARD

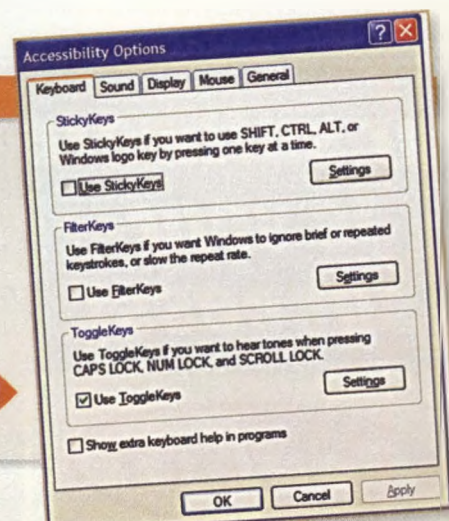
If you aren't always accurate when typing and make mistakes like pressing the Caps Lock key without realising, it can be quite frustrating to have to go back and fix your errors.

It is possible to reconfigure your keyboard to more closely suit your typing habits, but there is another, far simpler change you can make to try and solve the problem. Open up the Control Panel and select 'Accessibility Options'. It should open up with the 'Keyboard' tab active; if not, select it. Now tick

the 'Use ToggleKeys' checkbox and click on 'OK'.

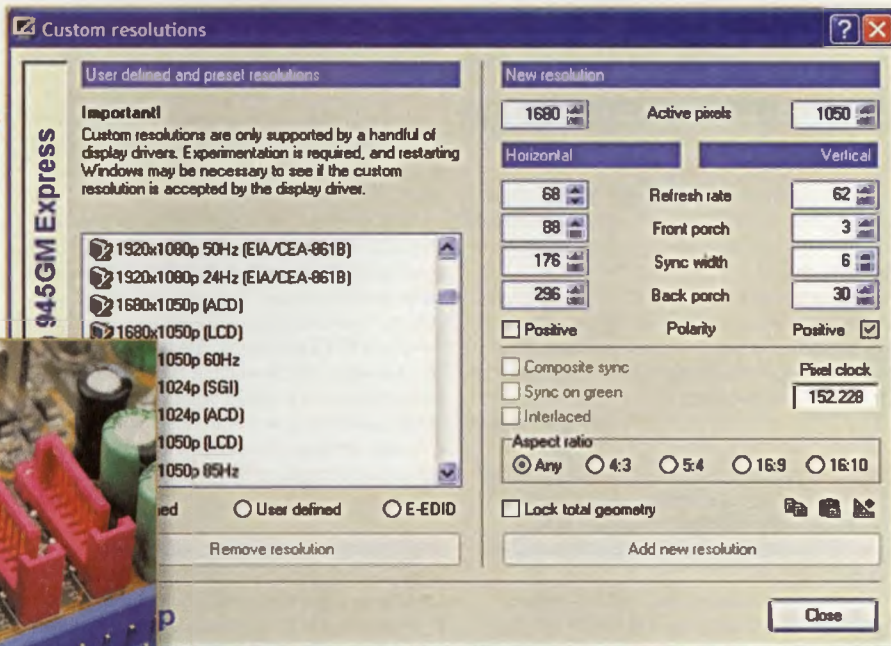
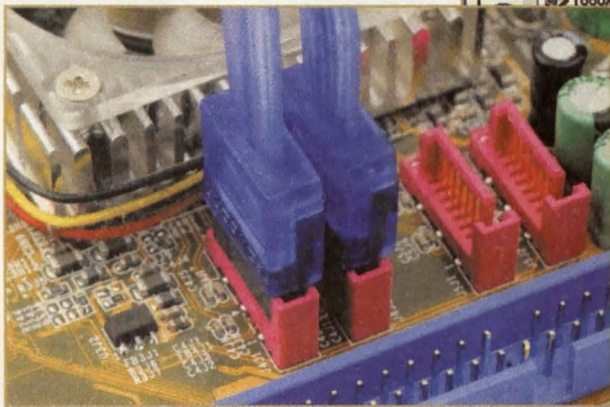
From now onwards, you'll hear a high-pitched beep every time you press the Caps Lock key to enable Caps, and a low-pitched beep when you turn Caps off. This will work whether you have a soundcard or not. Now you'll always know whether or not the Caps Lock is enabled.

One of the handy 'Accessibility Options' in Windows is the facility to make your computer beep when you press the Caps Lock key.





The right resolution: PowerStrip opens up previously inaccessible display modes capable of supporting it. Select the resolution most similar to the one you want.



Connecting SATA devices: unlike IDE ports, SATA ports require no particular connection order.

HARDWARE

CONNECTING SATA DEVICES

Q I recently bought a motherboard with four SATA connectors. Is this configuration correct?: SATA 1 hard disk drive, SATA 2 DVD RW drive, SATA 3 DVD ROM drive?

C Shing

A Unlike IDE ports, it actually doesn't matter which order you connect your devices, because there are no longer Master and Slave devices on the same port. If you go into your BIOS settings, you can set your PC to boot from any of your SATA ports, however, SATA 1 is where the OS expects to find the bootable drive, so it makes sense to plug your hard drive into this one.

HARDWARE

CABLE IS MISSING

Q My computer sometimes boots up and sometimes does not. The primary hard disk seems to have disappeared from the BIOS and it also shows the message 'Secondary IDE channel no 80 conductor cable installed'. It started after I installed an ASUS LightScribe DVD burner.

Joseph Z. Boso

A The 'no 80 conductor cable installed' message means just that. There are two common types of IDE cables (the flat cable which connects your drives to the main board) available on the market. There is the standard one, which has been around since IDE came out,

and then there is the '80 conductor cable', which was introduced to allow for the ever faster speeds of drives and the need for a better conductor cable to accommodate the increasing data streams. Most optical drives still come with the old type of cable as they simply have no need for the better quality cable and manufacturers need to cut cost to keep the price of their drives down. You can connect two drives to the average IDE cable. If either requires the 80 conductor cable, it can in the best case scenario merely affect the speed of the drives, but in your case cause drive failure and the main board to not recognise the drives at all. You'll recognise the 80 conductor cable as having a flatter profile than the old style cable, and should be able to pick one up for \$5 or so from your local computer shop.

Sebastian Scholtens

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Help



Ask the questions

Get quicker answers to your questions. Post them at <http://apcmag.com/askapc> for other expert readers to answer online. A selection will continue to be published in the magazine each month.

Q What's the point of having a 'Safely remove hardware' option in your Vista system tray? Most of the time when I need to remove a portable drive, I get a 'Windows can't stop your generic volume because it's in use...' message. But there is nothing using it when I check. Would pulling out the drive anyway damage anything?

Tyrone

<http://tinyurl.com/65t37z>

Q I have an HP Proliant ML110 G2, Windows SBS 2003, with an Adaptec 2610sa RAID controller running 2 x 80GB hot plug SATA drives in RAID 1 configuration. Should I be able to pull one of these drives out while the system is running and replace it with a similar drive? My concern arises from the fact that I have tried powering the system down and swapping drives, but if I replace the drive in slot 0, the system will not boot. If I replace the drive in slot 1, it reboots fine and rebuilds the new volume. As someone who has inherited the IT responsibilities in our organisation without any formal IT training, I'm not sure why this is happening and I'm certainly not confident about swapping drives while the system is running.

Clive

<http://tinyurl.com/3wuntf>

Q I am running XP Pro on my laptop with Office 2000; I was using Outlook Express for my emails and decided to try Mozilla Thunderbird for my emails.

I have decided I want to go back to using Outlook Express and have lots of emails saved in folders using Save As that I want to open with Outlook Express. The problem I have encountered is that after removing Thunderbird I can not open the saved emails with Outlook express.

Darren Cvek

<http://tinyurl.com/3lvo5g>

Q I would like to know if there is a program that I can install at my workplace for internal messaging over the network. Sometimes the internet is down and instead of calling 10 or more different people to ask/tell them the problem I would like a place where staff can send messages to PCs that other staff can check to see if there are any problems.

We can't rely on the internet always being up. Is there a program for that working on WAN network, something like MIRC where there is one area that anyone can add a message to?

N Savic

<http://tinyurl.com/5xywq4>

Q I was using Partition Magic 8.0 to convert a drive from NTSC to FAT32. At the end of the process, a message popped up saying there was an error during the process. The drive now shows up, but as an unformatted drive. I've been told that the partition tables are corrupted. How can I recover the data from this drive?

Chris Scheib

<http://tinyurl.com/4etxj2>

Q I have an old PC that works well except it can only use USB version 1.0 which is too slow for data transfer. Just wondering if there is any easy way to upgrade to 2.0?

Ding Min

<http://tinyurl.com/42nqwd>

Q Every so often Outlook Express displays a message that it can increase disk space by compressing messages in the various folders. Where does this come from and how can it be turned off?

Jim Core

<http://tinyurl.com/69plu9>

MORE READER QUESTIONS ON THE NEXT PAGE



Edit

Help



Ask the questions

Q I have been having a problem with my Vista Ultimate machine for a while now. Every time I boot up the system, halfway through the load screen, I get a Stop error of PFN_LIST_CORRUPT.

If I reboot and use Vista's DVD 'Repair your computer' function, it works fine until next boot.

The next time I reboot, the error comes up again and will never go away until previous remedy. I have no other option than to leave my PC on 24/7, an unrealistic expectation.

I have checked for RAM errors and other scans, but all the hardware is OK. What might the problem be?

Tommy Sailing

<http://tinyurl.com/6355ju>

Q I have just rebuilt my PC (new SATA drives, DVD drives, and 2GB of RAM and Gigabyte ga-945gcms2l mobo).

I installed a full version of Vista Home

Premium, then I tried to load the motherboard drivers from the CD supplied with the board.

When I try to run the CD I get the message: 'unsuitable for Win 98 or ME.'

I can open the disc and see the files that are on it but cannot access them, at the moment I have re-installed XP Pro and the mobo disc loads just fine.

Paul Welter

<http://tinyurl.com/6sxqjl>

Q My computer freezes at start-up when it says 'Detecting IDE Drives.' To fix this I have to power off then back on again and it boots fine.

Any ideas on how to fix this?

Also, another problem is that my computer can never stay on for 24 hours: whenever it ticks over to being on for 24 hours it crashes and I receive the BSOD (IRQL_NOT_LESS_OR_EQUAL)?

What's going on? How can I stop the BSods?

Scott

<http://tinyurl.com/5w7ubf>

Q Wondering if you or your readers could help with a problem I am experiencing whilst trying to install SP1 for Vista Ultimate edition.

During the update process I receive the following error message: 'An internal error occurred while installing the service pack. Error code: 0x80070490. See <http://go.microsoft.com/fwlink/?LinkId=101139> for details.' I have gone to this link and attempted all suggested resolutions without success. I have also done some extensive research online at various forums and there does not seem to be much on this problem in the context of updating Vista with SP1.

It would be great if you could help.

Nick Jansen

<http://tinyurl.com/5dt82b>

Answer the questions

If you can answer one of the questions above, please go to the web address listed at the end of each question. Each month we publish the best of the questions and answers in the mag. You can still send your answers to us via email from <http://apcmag.com/askapc>, but we encourage you to post answers online so readers get quicker responses.



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Webcam microscopics

With a little ingenuity, a webcam can reveal the hidden detail in the world around you. *Richard Wentk* shows you how.

REQUIREMENTS

• A WEBCAM

We used a good-quality Logitech QuickCam, but any camera is fine.

• ASSORTED LENSES

No need to dash out and buy a huge magnifying glass. Read on for tips on how to get the best results.

• BLU-TACK OR GLUE

If you're experimenting, Blu-Tack will do. Otherwise Araldite should cement things in place.

• A PAIR OF POLARISING FILTERS (OPTIONAL)

When you're happy with the results, a filter is a worthwhile investment.

Webcams are indispensable for online chat, but add some simple bits and pieces, many of which you may have in the cupboards at home already, and they can do a whole lot more. Unlike human eyes, which can't focus on anything less than a foot away (at least, not for people with normal vision), webcams can be placed right up close to an object. In this guide we'll explain how to get started, how to achieve good visual results and how to process them to make them even better.

I SPY WITH MY LITTLE EYE

We'll start with an unmodified webcam view, holding a webcam a centimetre or so away from the side of a bottle. When viewed on a monitor, the approximate magnification is around six times. When you try this yourself, the size of image you see will depend on your monitor's pixel density. Usually this is between 70-90dpi, so we could lose — or gain — a small factor here. Getting this up close and personal to our subject shows promise, but the webcam's own lens has

Our finished microscope has a modest magnification of 20 times, which is enough to reveal detail on this wasp that you can't see with the naked eye.



DO THIS...

HIGHER MAGNIFICATIONS

It's possible to create a more powerful microscope by pulling your webcam apart, taking off the front lens and replacing it with your own custom optics. Contact lenses are very close to being the right size and are relatively easy to work with, so, if you have a spare pair of solid glass contacts, they're ideal for further experimentation (plastic soft contacts don't work as well). We also experimented with the lens from the laser assembly of an old DVD drive. The lens itself is tiny, which makes it hard to work with, and getting the optics lined up accurately is a challenge. We suggest using thick plastic from a round washing-up liquid bottle. By squeezing the plastic you can move the lens backwards and

forwards to find the perfect focus point. A sawn-off 35mm film canister will serve as a lens holder. Another alternative is the focusing lens from an old laser pointer. We don't suggest destroying your high-power green or blue pointer, but you can buy budget low-power pointers for next to nothing. The optics are budget too, but they're small enough to work as a replacement alternative lens, and can be worth experimenting with. As a last resort you can also use scientific optics — but they're expensive, and you'll probably find you can buy a complete budget microscope for the same cost and use a simple cheap lens as a webcam adaptor at the eyepiece.



Here's the lens from inside the remains of a DVD drive we pulled apart. Pop it out for more detail.



▲ **Magnification x0: unmodified, the picture is blurry.**

too long a focal length to show a clear image. The answer is to add a close-up focusing lens. This adds a small magnification factor but also draws in the light so the webcam focuses correctly. You'll find most lenses will do this a little, but the ideal lens will be close to the size of the webcam's aperture. You won't get much joy from a wide hand-held magnifying glass or from a much smaller lens. The curvature of the lens defines the magnification, and if you use a big lens you'll get very small, effective curvature as the light that ends up on the webcam's sensor will pass through the flat middle area. A small lens won't work as it would hide some of the image.

After trying out various options, we settled on an unusual contraption called a linen checker. It is designed to stand up above an object and show extra detail close-up. In spite of the name, linen checkers are as likely to be used for photographic reconnaissance as for checking linen. We had one to hand, but you can also find them in photographic stores. The nominal magnification is four times, and if you hold your eye to the lens with the frame folded out you'll see a very clear view of the object the frame is standing on.

IN THE FRAME

Here, we don't need the frame. If you want to attach the lens permanently to your webcam, you

▲ **Magnification x12: adding a focusing lens sharpens the image.**



can remove the frame by snipping it off with some tough wire cutters. When the lens assembly is free, the next step is to set the focus and attach it. If your webcam has a focus ring, make sure it's set correctly — use trial and error for this. Hold the new focusing lens right up against the webcam and set the focus so you get a clear image. The focal length won't quite be reduced to zero, so hold the combination a centimetre or so away from your object. If your webcam doesn't have a focus ring, you may need to move the new lens out a little to get a sharp image.

Once you have the focus set, fix the lens to the webcam. We used Blu-Tack, but for a more permanent assembly, use Araldite. Make sure you keep the aperture of the webcam clear. It doesn't matter how much gunk you have around the aperture, as long as it doesn't block the view in front of it. Make sure the lens is at the same distance from the aperture as it was in the previous step. This is easy when the lens and webcam are touching, however, if you need to hold the lens out, use some stiff card rolled into a tube and cut it to the correct length. It may take a few goes to get it right. Use Araldite or Blu-Tack to hold the tube against the webcam and the lens against the tube at the other end.



▲ **Magnification x20: with two lenses there's even more detail.**

THE NEXT LEVEL

At this point we have the beginnings of a system with a modest but useful magnification. Can we increase it further? Yes — and as you might expect, all you need is another lens. This time the lens has to be wider than the aperture because it's going to be held at a short distance from the object (if it's too short it will limit what appears in the frame). We used a hand-held 48mm plastic magnifying glass, bought from a local optician. A medium-sized glass magnifier would have worked too.

Holding this in front of our webcam combo and moving it by hand to get the best image produced a further magnification of maybe one and a half times. This doesn't sound like much, but the combined magnification of both lenses and the webcam's own macro view is now around 20x — which isn't bad for something that costs next to nothing. As you can see from the photo, it shows enough detail to start to reveal the 300dpi half-tone dot printing pattern on the side of the bottle; to the naked eye, the pattern looks like a continuous shade, so we're already seeing invisible details. We can also see some dust which is completely invisible to the naked eye. The sharpness is impressive considering

SPOTLIGHT ON...

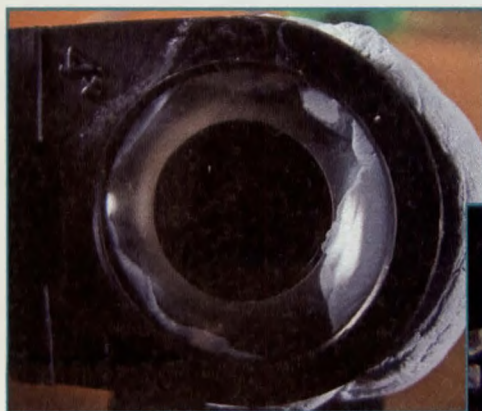
LIGHT SOURCES

Lighting your sample can be a problem. Scientific microscopes back-light samples using a mirror that reflects light up and through the slide. This works for certain subjects, such as biological experiments, but is hard to set up without building a permanent framework to support the microscope and sample, so we improvised with a more flexible arrangement. The ideal light source is cool — no incandescent bulbs, please — and moveable. For a wide ambient light source you can use a monitor set to display a white background. Keep your sample close enough in front of it, and — depending on the quality of your webcam — you may find you have enough light to

work with. White LEDs are a good source of more directed sample lighting. They create broad-spectrum light which isn't dissimilar to daylight, and they don't pump out heat. Keyring lights or a pen torch will work well, but for maximum flexibility we recommend using a USB gooseneck light. You can find these for sale in electronics stores or on eBay. Budget gooseneck lights use budget LEDs, and for maximum benefit rip out the existing LED and replace it with a high brightness one. But you'll probably find that the stock lights will create enough brightness for you to work with.



▲ **A sample's eye view of a gooseneck light source — you can plug it into a Mac or PC.**



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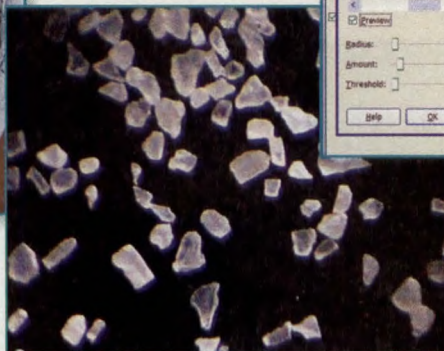
that some of the optics are plastic, and the rest are held on with Blu-Tack.

But how to hold the second lens in place? There are various options. One is to use more glue or Blu-Tack and another cardboard tube. The advantage is permanence, but the disadvantage is that it would be more useful to be able to move this lens closer to and further away from the object to change the focal plane. It's also handy to be able to hold the lens above an object — and focus through it.

Scientific microscopes use a gearing system that allows focus to be defined very precisely and accurately. We're going to be very low-tech and park the magnifying lens between a couple of paperbacks. This keeps it flat, but also makes it possible to push it up and down to move the focal point. It's not the last word in optical engineering, but it's more flexible in practice than a more complicated solution, and it's also quick and free. The only catch is that you may need to sift through a few books to find one that's the correct width — but with push-focusing, you don't need to spend too much time on this trying to get it spot on.

Now we're ready to add some lighting (see 'Spotlight on... light sources') and we can start looking at very small things. Some suggested objects include fine table salt (you'll be able to

Salt crystals on a dark background created by our polarising arrangement.

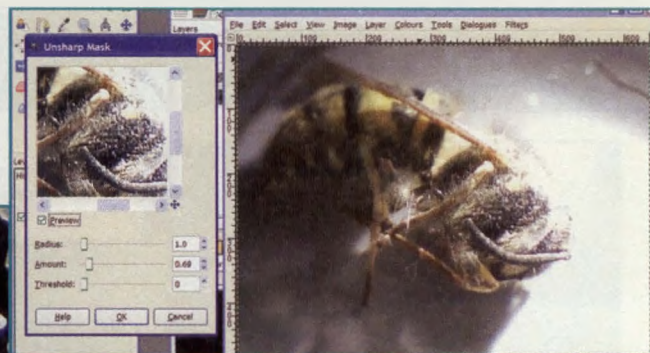


see the crystals in detail), CDs, food (you won't want to eat afterwards) and almost anything that will fit under the magnifier. Because the design is hand-held it's easy to get the maximum magnification and best view. The video feed may be slightly wobbly, but you'll find that if you grab photos as you go they'll be clear and sharp; because you can take an unlimited number of shots, you're certain to get some that are worth keeping.

CRYSTAL CLEAR

What about enhancing the image? The Gimp and Photoshop both include the tools you need to make your images even punchier. Start by making sure you have a good exposure. Many webcams include automated exposure sensing, although this can take a few seconds to catch up with changes in brightness, so when you adjust the lighting wait until the image is stable before taking any shots.

The most useful effect is 'Unsharp Mask'. This is a fake sharpness effect — it relies on an optical illusion, not real sharpness — which makes an image crisper and brings out extra detail. Use a radius of one to two pixels and an amount between 0.25-0.50 (20-50 per cent in



The 'Unsharp Mask' filter in The Gimp makes our wasp's hairs clearer.

Photoshop). You'll see the image sizzle with extra sharpness and detail — which is not quite the same as adding more magnification, but is a useful way to fake the effect.

You can also resample the image to make it bigger. This is equivalent to using the digital zoom on a camera and is another way to fake a higher resolution — it doesn't add any real detail, but it makes the detail which is there more obvious, especially combined with unsharp masking afterwards. In Gimp use Image > Scale Image and a factor of 150-200 per cent. A larger virtual magnification is likely to take the fake factor too far to be useful.

TURN DOWN THE NOISE

If you want an even cleaner image, you can eliminate some of the random noise by averaging a selection of images together. You'll need to fix the webcam to make sure the object is fixed in the view, then take an even number of frames of the subject. Collect them into a stack of layers, turn down the opacity on each one proportionally — eg. for four layers use 25 per cent opacity — and use 'Addition' to add them together again. Noise, which is different for each frame, will be averaged out and you'll get a sharper image. Webcams tend to be noisy, so if you work with 10 frames you can remove it and significantly improve the image quality. **ETC**

DO THIS...

CROSSED POLARISERS

Experimenting with crossed polarisers can make your webcam photos look more professional. A polarising filter is often used in photography to cut out sky glare and minimise reflections. Sunglasses use the same technique, and a polariser is sometimes added to a scientific microscope for the same reasons. However, you can go a step further and use two polarisers. We bought a pair of cheap, used photographic polarisers and rotated them so the polarising angle was at right angles. This seems pointless without a sample because all you can see is black, but if you add a sample between the filters — we used some salt crystals — something interesting happens. The crystals add their own polarisation to the light, which means you can see

them clearly. And because the crossed polarisers don't let light through elsewhere, the crystals appear against a black background. So crossed polarisers act as a kind of optical difference blend effect — they'll turn background areas dark but make the sample clearer. If you can find a see-through plastic ruler, put it between the crossed polarisers and you'll see a riot of colour that reveals stresses in the plastic. A professional microscopy technique uses thin layers of crystals between crossed polarisers to create similar effects with richer detail. You'd need higher magnifications and very thin samples to create that effect at home, but crossed polarisers still add definition to samples.



We found that 58mm and 62mm filters slotted together without needing a linking adaptor ring.



Hard disk speed tweaks

Don't get mad with a slow or noisy hard disk — *James Morris* shows you how these top techniques can cure all your problems.

REQUIREMENTS

● A PC

Virtually all PCs have a hard disk, unless you've entered the Solid State Disk generation early.

● AT LEAST ONE HARD DISK...

...but at least two will be required for RAID, and three or more if you're after RAID 5.

IN THIS SERIES

● July '08 — Hard disks

The rules, arts and secrets that let you get the best from your hard disk.

● August '08 — Processors

We delve into the black arts that surround processor installation and configuration.

Last month, we discussed how to choose and configure your system memory for best performance. This month, we turn our attention to a more long-term form of storage — the hard disk. Installing a Serial ATA drive, as the proverbial saying goes, is not rocket science. Simply screw it into an available 3.5in drive bay and connect power and SATA cabling. After that your drive should appear in the Windows Disk Management utility, ready for formatting.

Unlike memory, processors and graphics cards, however, you can't improve your hard disk's performance by increasing clockspeeds or playing with timing. In the days of FAT and FAT32, you could vary behaviour for different applications by tweaking cluster size, or use smaller partitions to keep cluster size small, but NTFS handles this level of management automatically. Clusters will be 4KB in size for volumes of 2GB or greater, so very little space is wasted. Aside from ensuring your disks have at least 20 per cent free, and regularly defragmenting them, there isn't much you can do to make a single drive go faster, or use space more efficiently.

SLOW TO COMPRESS

One of the few options available is to turn on NTFS compression. To do this for an entire drive, simply open up My Computer, right-click on the drive letter for the partition you wish to compress and choose 'Properties'. Whether you're running Windows XP or Vista, there will be a compression checkbox available in the 'General' tab. Simply select this, hit 'OK' and watch your system slow to a crawl as all your files are compressed. This is a task best left for when your PC is unattended, such as overnight.

Once the process is complete, system performance should return to normal. You can also compress individual folders or files. Right-click on the target and select 'Properties', but this time choose the 'Advanced' button. The compression checkbox will be found in the resulting dialog.

We would only recommend the use of compression on reasonably fast, multi-core computers, however, rather than the old clunker you have



WD's Raptor looks as dramatic as the drive is fast. If you're after the ultimate PC, such a drive is key.



left over from the 20th century. On the one hand, a compressed file is smaller than an uncompressed one, so it takes less time to load from disk. But on the other, there's a processor overhead dealing with the compression. So the effect on performance is not always beneficial. You can save a lot of disk space, though, so compression is well worth using on a cramped drive you don't plan on upgrading just yet.

REDUCE PLATTER CLATTER

Hard disks can be a significant source of system noise. Spinning at 7,200rpm or more, the platter rotation is beyond the most noticeable portion of the audio spectrum, but they still emit an annoying whine and contribute to overall system vibration. Aside from opting for a specifically low-noise hard disk, such as a Samsung Spinpoint or Western Digital's new GreenPower range, you can reduce the effects of this vibration by installing your hard disk inside a hard disk enclosure. This is like a little sound-proofed room for your hard disk, preventing noise from escaping.

However, since hard disks get hot, encasing them in foam isn't necessarily going to improve their longevity. Instead, a good compromise is to fit your disk on rubber mountings. For example, Scythe's Hard Disk Stabiliser II allows you to install a drive on rubber feet, which then fit onto a frame for a 5.25in drive bay. There's still plenty of space for airflow, so the disk can be cooled. Even better is a hard disk cooler with built-in rubber mounts, such as Zalman's ZM-2HC2, which uses heat pipes to keep the disk frosty, and also mounts in a 5.25in bay.

A number of premium PC cases are now including sophisticated anti-noise provisions for hard disks as standard. For example, Zalman's GT900 and GT1000 Z-Machine chassis secure hard disks with a rubberised clamping system. This helps absorb the vibration, but still allows the necessary cooling airflow. Even a number of cheaper chassis now use custom mounts for hard disks — silicon grommets with elongated screw fittings to isolate drive vibrations (such as

Used space:	61,270,769,664 bytes	57.0 GB
Free space:	1,644,363,776 bytes	1.53 GB
Capacity:	62,915,133,440 bytes	58.5 GB

Drive C

Compress drive to save disk space

Antec's NSK4000), or quick-removal trays with rubberised feet for the disk.

However, don't expect a transformation from any of these provisions. They are most effective with noisy hard disks, such as Western Digital's 10,000rpm Raptor X. If your hard disk is already reasonably quiet, you won't notice much difference, and there are likely to be more significant sources of noise in your computer, such as the graphics card cooler or system fans. If you're after quiet computing, sort out these clamorous culprits first, and then dampen your disk for even more noise reduction.

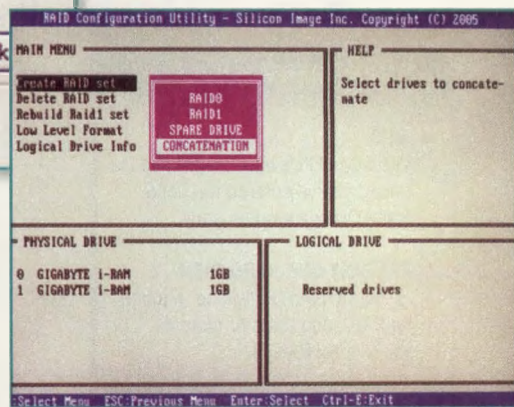
SETTING UP A RAID

Although you can't overclock a hard disk, there are other options. Processors and graphics cards have been benefiting from parallelism for a few years, but hard disks have been configured in multiples for even longer. The Redundant Array of Inexpensive Disks (RAID) was originally intended to gang together a bunch of cheap hard drives, and keep data on more than one at a time. In the event that one disk failed, the data would be safely mirrored on the other. This kind of setup used to require a special third-party controller, but nowadays virtually every motherboard has the capability built in.

The different types of RAID are denoted by a number called a Level, which refers to how the disks are configured in relation to each other. Some Levels are aimed at performance and

Windows XP and Vista have file and partition compression built in. Enable it by checking the box.

A motherboard's SATA RAID utility is called up after the BIOS post screen.



some at fault tolerance, but only a few are in common usage. The two your motherboard chipset will almost certainly support are RAID 0 and RAID 1. The former, known as striping, splits your data into chunks and writes different chunks simultaneously in parallel to two or more disks at once. The latter, known as mirroring, writes the same data to two disks at the same time.

In theory, striping multiplies performance by the number of disks used, but the processing overhead of managing the array reduces this, and the benefits are only really noticeable when copying large files. System bootup times and loading games levels should be improved, but general application performance will be relatively unaffected. The reason for this is the size of the chunks that RAID 0 splits your data into before writing it in parallel. The chunks, called clusters, can be anything from 4KB to 2MB in size, although most controllers use 32-128KB by default.

DO THIS...

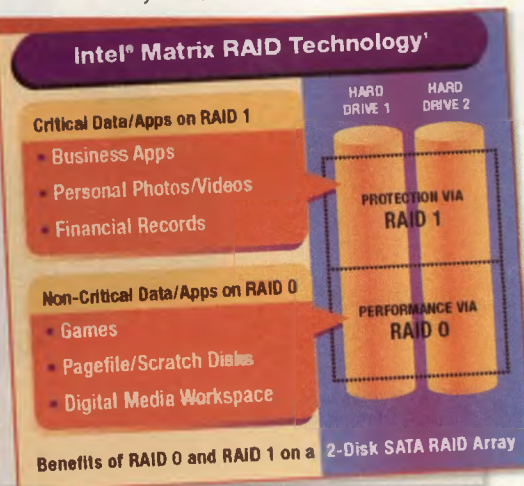
SET UP INTEL MATRIX STORAGE

RAID 0 striping gives you faster throughput, but it doubles your chance of losing data. RAID 1 mirroring, however, only keeps your files safe. What if you could have the best of both worlds? That was Intel's plan when it created Matrix Storage, which arrived with the ICH6R Southbridge in 2004. You still need two identical hard disks, but these are then divided into two portions, the same on each disk. One portion pair is striped, the other mirrored.

As with any RAID, back up any existing data first, because creating the array will demolish this. Then enter the BIOS utility of your Intel chipset motherboard and ensure the Southbridge SATA controller is in RAID mode. This should then

bring up a separate Intel Application Accelerator utility after the initial BIOS post, requiring a key combination such as Ctrl+I to enter. You can then take a pair of disks and set them up as Intel Matrix Storage, choosing how much of each one to use for RAID 0 and RAID 1. The latest Intel chipsets also offer RAID 5, when using three or more disks. Once the Matrix RAID is configured, you can install Windows. Use the RAID 0 array for the OS and applications — for performance — but place your data on the RAID 1 portion for safety.

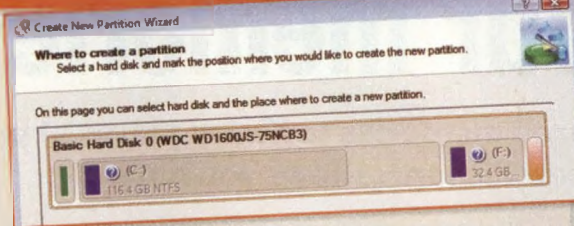
Intel's Matrix Storage splits disks into matched portions, using one pair for RAID 0 and the other for RAID 1.



DO THIS...

PARTITION YOUR HARD DISK

You may not think it, but splitting a drive into multiple partitions can benefit performance under some circumstances. Because a disk is circular, the drive head can read more data between accesses on the outside of the disk than on the inside. If you create a small partition at the start of the drive just for your system files, accesses will be limited to the fastest part of the disk, resulting in a small but welcome speed boost. Multiple partitions are a must for multi-OS installations. Every OS you want to install requires its own partition — except Linux, which requires two. Partitions make backing up data a lot easier too. With a utility such as Norton Ghost, you can copy and restore entire file systems, including an



Tools such as Paragon Partition Manager let you create a new partition from free space, even if your OS is already installed.

OS install, rather than just individual files. It's best to partition your drive before you install anything, using a partition tool such as FDisk or GParted (www.gparted.net). However you can dynamically repartition a drive using Partition Magic or similar utility, even after data has been written to it.

Any file smaller than the cluster size will only be written to one hard disk, as it can't be split up. A quick look at the contents of your hard disk will reveal lots of little files as small as 1KB. However, setting your cluster size as tiny as possible makes more work for the RAID controller, which can have a negative effect on performance too. This is why most RAID chipsets choose a middle ground by default. General disk access from applications favours smaller clusters, but hefty audio-visual files are better off with large ones, so whether benefits are to be had largely depends on usage.

Setting up a RAID with an integrated SATA chipset will usually mean destroying the existing contents of any hard disks involved. Although standalone adaptors often give the option to migrate your data, it's still a risk. So you should always make a full backup of your files before upgrading from a single disk

to RAID, and re-install the operating system and applications from scratch. But configuration is not hard. Once you've installed your disks, enter your system BIOS to ensure the SATA controller they are attached to is in RAID mode. This will then call up a separate utility after the initial BIOS post, with a keystroke combination to enter. Use this to configure your disks into a RAID.

RAID BY NUMBERS

Apart from RAID 0 and 1, the other Level in regular hard disk usage is RAID 5. Some integrated controllers now offer this out of the box, such as Intel's Southbridges, but most don't. That's probably because of the cost involved in utilising such a setup. You need at least three disks for RAID 5, but you get the capacity of two. The third is used for parity, although in reality this is spread across all three

HANDY TIP

Up until the advent of Windows XP, most home PCs used FAT and then FAT32 formatting. You may still have a disk using FAT32. However, FAT has a limit of 4GB per volume, and FAT32 tops out at 32GB when formatted with Windows XP. It can theoretically support up to 2TB, but only using a third-party utility to create the partition. So neither flavour of FAT is really ready for the modern era of terabyte storage. Fortunately, the NTFS format has a default maximum of 16TB using its 4K clusters. But you can also force cluster sizes up to 64K by using the `FORMAT /A` command, which pushes the ceiling up to 256TB maximum, although compression is only supported with 4K clusters or smaller.

drives. This means that if you lose one, you don't lose any data. With RAID 5, writing data is in fact no faster than a single disk, and may be even slower than that due to the management overhead of creating the parity data. But reading is performed in a similar fashion to RAID 0, so it will offer much faster sustained throughput when accessing the disks.

The beauty of RAID 5 is that it's a happy middle ground between RAID 0 and 1, providing the read performance of the former, but the fault tolerance of the latter. For the same reason, Intel created its own hybrid RAID a few years ago, in the shape of Matrix Storage (see 'Do this... Set up Intel Matrix Storage').

However, although lots of premium gaming and performance PCs — and even the odd professional notebook — are now shipping with a RAID 0 configuration for the boot disk, this is not something we would recommend for everyone. Since you lose all your data when just one disk fails, you double your chance of data loss for not that much performance gain in everyday usage. If you really want a faster PC, your CPU should be the focus of attention. So next month, in our third and final part of this optimisation trilogy, we turn to that most important part of your PC — the central processing unit. [ETC](#)



ALTHOUGH STANDALONE ADAPTORS
OFTEN GIVE THE OPTION TO MIGRATE
YOUR DATA, IT'S STILL A RISK

SPOTLIGHT ON... SSD

The Solid State Disk (SSD) has been waiting in the wings to take over from hard drives for years. But each time it looks like mechanical storage's days are finally numbered, a technological leap such as perpendicular recording gives it a new lease of life. Nevertheless, 2008 could be the year the SSD becomes a viable option for more than just mobile devices and pricey MacBook Airs. Although Flash Memory has long offered significantly quicker access times than a hard disk, only recently have ultra high-end models from Mtron (www.mtron.net) been able to provide faster sustained throughput as well.

Capacities are growing apace, too. Samsung has a 128GB model due in the third quarter of 2008, and a 256GB version by the end of the year using Multi-Level Cell (MLC) stacking. Intel is also planning to launch 1.8in and 2.5in SSDs in 2008 with capacities up to 160GB, and pledging sustained throughput significantly greater than 100MB/sec. So although the trusty hard disk is likely to remain supreme from a cost-per-gigabyte perspective for some years to come, it really could be time PCs optimised for performance moved over to SSDs. Let's just hope prices go down in the process.



Mtron's SSDs help conserve notebook batteries. Flash-based drives can be used in desktops too.



Digitise your memories

Don't trust your most treasured memories to flimsy pieces of paper; digitise them instead. *Matthew Richards* shows you how.

REQUIREMENTS

● A SCANNER

Any flatbed scanner, although you'll need one with a transparency adaptor if you're planning on scanning slides and negatives, as well as paper-based prints.

● IMAGE-EDITING SOFTWARE

For this tutorial we've chosen the Gimp, which has a sparkling array of powerful imaging tools. Free download at www.gimp.org.

● PHOTO ALBUM SOFTWARE

For organising your scanned photos along with those from your digital camera, the excellent Picasa 2 is a free download from Google, at <http://picasa.google.com.au>.

● DOCUMENT STORAGE SOFTWARE

For effectively scanning and storing documents, MangoFile is ideal. You'll find this software at www.mangofile.com.

The only hardware essential for digitising your photos is a scanner. Some of the latest photo-friendly, all-in-one printers have high-quality scanners built in, with the Canon MP610 and Epson RX585 leading the pack. For even better quality, and the facility to scan transparencies and negatives as well as photo prints, it's the same two companies that offer the best value for money, our choices being the CanoScan 4400F and the Epson V200.

Once your scanner is set up, the whole transition from paper-based originals to an immaculate, sensibly organised and safely backed-up digital media collection is a five-step process. Moreover, you can save time and dramatically improve results at each stage along the way, from the correct use of advanced scanner settings to initiating an effective back-up routine.

SCAN YOUR PHOTOS

For the best and most consistent quality, it pays to calibrate your scanner at the beginning of each session. Almost all standalone scanners use conventional CCF (Cold Cathode Fluorescent) imaging lamps, which take a minute or so to warm up to full operating temperature and to provide correct colour balance. Once this is done, follow the calibration routine in your scanner's driver software.

You can scan photos directly into whichever image editing program you're using, including the Gimp, or into the Picasa 2 photo album software, both of which we'll be using in this tutorial. Either way, clicking the 'scan' button in the program will launch the scanner driver, complete with various dialog boxes that you can use to refine image quality.

For glossy or matte prints, turn off the 'descreening' option, which is only suitable for

scanning magazine pages. Next, choose a scanning resolution. It's a good idea to keep your photo scans at about the same size as digital photos. For example, when scanning 6 x 4in prints, choosing a scanning resolution of 300dpi will produce 1,800 x 1,200 pixel images, equivalent to two megapixel digital photos. Doubling the scanning resolution to 600dpi will create 8.6 megapixel pictures.

Most scanners offer tools for adjusting brightness, contrast and colour balance. Correcting these by using the scanner's image preview window can save time at the image editing stage. More advanced tools often include options to reduce the appearance of grain. Another common option is for the removal of dust and small scratches — particularly useful when scanning 35mm transparencies or negatives, where the larger scanning resolutions needed can magnify these unwanted attributes.

IMPROVE YOUR IMAGE

Using a program such as the Gimp, it's quick and easy to remove obvious photo flaws. You can also improve lighting, with individual adjustments for highlights and shadows, or by using features like levels and curves.

Two of the biggest differences between digital photos and conventional photos that have been scanned are sharpness and noise (which looks like grain). Scanner settings often allow you to apply an Unsharp Mask to sharpen scanned images, but you generally get a better level of control by applying sharpening later on, through adjusting the strength of the Unsharp Mask in an image editing program.

You'll notice that more aggressive levels of sharpening usually result in more image noise, so it's best to be conservative, or to apply a noise

DO THIS...

DIGITISE YOUR DOCUMENTS

Important household and business documents can benefit from being digitised every bit as much as photo prints. However, storing them as basic JPEG images can make them hard to find later on. MangoFile automates the scanning process and makes it simple to file documents effectively, so you can search for and retrieve them in the future. Options include whether to scan documents in mono or full colour, while a ready-made virtual filing cabinet and thumbnail previews make for easy browsing. The program also comes complete with security features.



MangoFile makes short work of scanning and organising all your paper-based documents.



Scratches are easily removed with the Cloning Brush in the Gimp.

Viewing your images together can highlight differences in quality.



The Timeline in Picasa 2 is perfect for a walk down memory lane.

reduction filter after sharpening. If you're going to resize an image, it's best to leave any sharpening until the resizing has been done, as resizing can significantly soften the appearance of the image.

As well as correcting for fading, a little practised use of the Cloning Brush is great for removing scratches, coffee stains and the like. For small marks as well as for skin blemishes in portraits, the Gimp also includes a Healing brush. This works in a similar way to cloning but, rather than copying pixels directly from a source area into the target area, it samples the colour and brightness in the area around the blemish, making for a more seamless correction.

GET ORGANISED

Collections of photos and scanned documents can soon become quite large, so it's helpful to employ a structured approach. A good way to arrange a folder structure is chronologically, with, for example, nested folders for each set of images through the years.

Enter the year, followed by the month, then the day. This way, folders will always be listed in date order. Chronology doesn't suit every collection; a good alternative is to arrange folders by categories or themes,

such as Holidays, Family, Wildlife and so on.

Even with the most organised of folder structures, sometimes it can be hard to navigate and find your photos. This is where photo album software such as Picasa 2 comes into its own. All you need to do is to define which folders you want to include and the program will automatically catalogue them, building an album of your images that you can scroll through at will.

Better still, you can attach keywords or tags to images, as well as Favourites ratings, allowing you to build up subsets of images as smaller, separate photo albums within the larger context. All this metadata can also be used as search criteria for finding images in the future.

ENJOY THE SHOW

Picasa 2 has a very fast, automated process for cataloguing all your photos and making them available for viewing in a number of ways, as well as bringing your scanned and digital photos into the same arena. The Timeline is particularly useful, boasting a slick and stylish interface for looking through your collection. You can also sit back and relax with a full-screen slideshow.

More advanced options include a wide range

of image editing and enhancement tools, but the creativity doesn't stop there. Handy button bars offer shortcuts to using selected images for blogs and collages, printing them on your desktop or ordering prints online, or for sending them as email attachments. You can even create entire web-based photo albums and upload them direct from within the program.

Hard drive failure, burglary or fire aren't out of the question. Sticking with Picasa 2, you can set up and execute synchronised back-up routines, archiving your image collections to CD-ROMs, DVDs or external hard drives.

No back-up media is likely to last for ever. Whichever type you use, it's best to keep media for archive use in a dark place, and preferably one where heat and humidity are low. Large, external hard drives are becoming increasingly popular but, again, the magnetic media won't retain data forever, so it's best to copy information to a new disk every few years.

Finally, never overwrite your only copy of back-up data, in case everything goes wrong at the worst possible moment. Instead, keep at least two back-up sets and update them sequentially. This should ensure that your prized collection stays out of harm's way for a lifetime and beyond. **ATC**



Picasa 2 is a secure method of image uploading and archiving, as well as a handy management tool, and it's completely free software too.

SPOTLIGHT ON... ONLINE BACKUP

Effective backup can be an expensive chore, especially if you have to buy external hard drives and (ideally) find a different location from your home in which to keep them safe. An elegant solution comes in the form of online backup, where you simply upload your files for storage over the internet. There's a wide range of companies now offering this service but our favourite is Diino, which offers 2GB of storage space. There are both business and personal offerings to choose from. In our tests, a 20MB backup took about 45 seconds to upload and just 10 seconds to download again, making Diino one of the fastest services available. Find out more at www.diino.com.



Offering speed and simplicity, Diino is an excellent choice for online backups.



Take control of your email

Forget putting your email in the hands of massive corporations.

Graham Morrison shows you how to use Linux to run your own server.

REQUIREMENTS

● UBUNTU 7.10 OR LATER

Ubuntu is a good choice for mail servers because there's a constant stream of security updates for the server packages.

● AN 'ALWAYS-ON' INTERNET CONNECTION

With your own server, if you're not online, email won't be delivered. This means you need a constant connection to the internet.

● PORT 25 MUST BE OPEN

An email server uses port 25 for sending and receiving email, and some ISPs block this service to avoid spam.

● STATIC DOMAIN NAME

Don't worry if you don't have one yet. This article outlines a way of getting them for free using a dynamic DNS service.

INSIDE INFO

- There are many books on Postfix configuration, including O'Reilly's *The Definitive Guide* and *The Book of Postfix* published by No Starch Press. However, there are also plenty of online resources, and the best place to start is the Ubuntu forums (<http://ubuntuforums.org>). There are many people running their own email servers, and someone is bound to have encountered and solved any problems you might have.

When this project's complete, you'll be able to send and receive email with your own email address in your client of choice.

With web-based email dominant, you might think traditional email clients and the servers that supply them are a thing of the past. They're not, and there are still many reasons why you might want to run your own. The first group to benefit from their own servers are small businesses. Despite Google trying hard to migrate companies to Google Mail, the vast majority will still use servers and clients. This ensures that a business can keep complete control of the mail flowing in and out of the company, making essential tasks such as backup and spam protection much easier.

But there are plenty of reasons for running your own mail server with a far more modest setup. For a start, you won't be restricted to something clunky like 'mrboob_harris_1972' as a user name. Running your own email server means you can choose anything you like. You'll also free yourself from the stream of adverts that plague commercial webmail sites, and when hell does freeze over and Google turns bad, your life won't be in its hands. Another advantage of running your own server is that you can take your email with you when you change provider. As long as you own the domain name you're using to direct the email, you can keep the same address with any ISP you care to use. Indefinitely.

STEP 1: CONNECTIONS

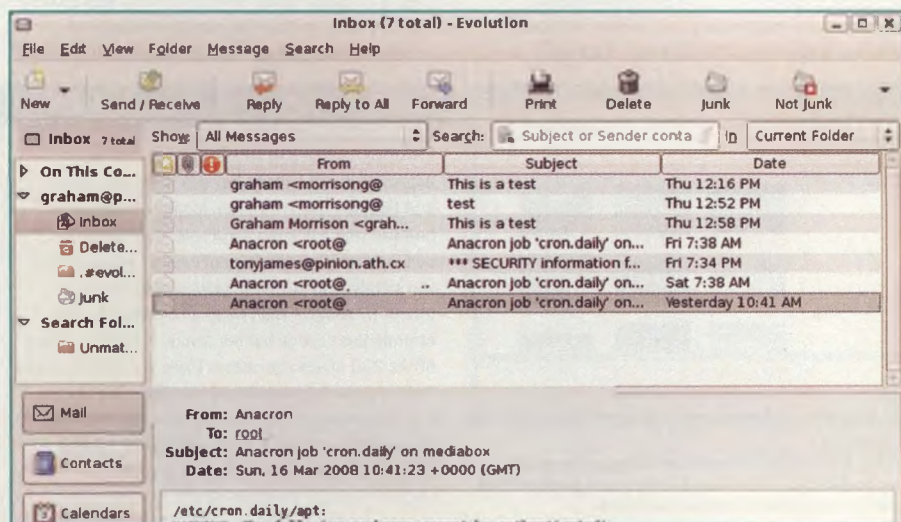
The first thing you need to consider is the domain name. A name is essential because email is always directed across the internet to the domain name of your machine. This doesn't mean you need to spend a fortune on 'mymail.

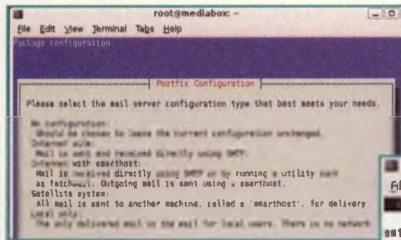
HANDY TIP

If you're using the DynDNS service to provide a hostname and keep up with your dynamic IP address, you can install a tool called 'ddclient' that will help. After you've added your account details to the configuration file, you can run ddclient as a daemon, a background process that watches for any change in your IP address. When it detects one, it immediately updates the DNS configuration at DynDNS so that emails (and even web browsers) can still find your machine.

com', or even have a static IP address. Free services such as DynDNS and FreeDNS can assign you an arbitrary domain name and can be updated immediately to accommodate changes in your dynamic IP address. Many ADSL routers provided by ISPs will include this function built-in, allowing the router to update the services such as DynDNS whenever your address changes. If your router can't do this automatically, you can either install a small script on your Linux box or make the change by hand using a web interface. This kind of service is essential if your ISP changes your address with every connection (as most do).

If you already own a domain name, you can either configure its DNS entry to point to one of the previously mentioned free services, or tell it to direct requests to the IP address of your static internet connection. The next problem is port configuration. You need to open a hole in your firewall that will pass connections on port 25





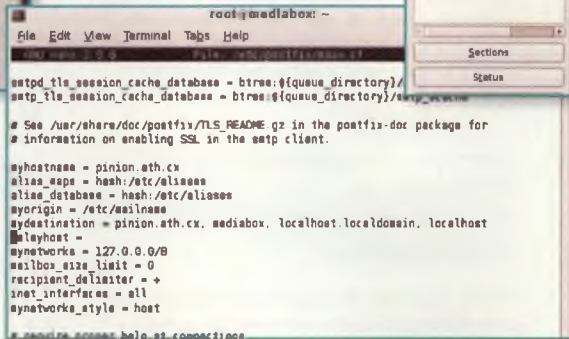
Postfix has its own configuration script that handles most of the important aspects of the installation, but it needs to be run from the command line.

(SMTP) into and out of your local network. This should be easy enough, but there can be problems with outgoing connections. Some ISPs block outgoing SMTP, either because they feel it's a professional-grade requirement that isn't suitable for domestic connections, or that it represents a significant spamming risk. The spamming risk is real, as a hacker will often install an email relay on a hijacked system, churning out emails on port 25. If port 25 is blocked, you need to either persuade your ISP to open it or use a proxy service that will forward from another port. Another solution is to use your ISP's own SMTP server for sending email. If your ISP offers such a service (and most that block port 25 do offer their own as an alternative), then this is the easiest solution.

STEP 2: SOFTWARE

We're going to install our mail server onto Ubuntu 7.10 (the Gutsy Gibbon). You can use any recent version, but you need to make sure that updates will be provided for the next year or two. This will ensure your system's security won't be compromised if some form of exploit is discovered for the email server we're using — remember, port 25 is now wide open to the whole internet. The server software we're going to use is called 'Postfix'. Postfix is an MTA: a Mail Transfer Agent. It does a job that for many years was performed by the ubiquitous 'sendmail' application. But thanks to some serious security

'/etc/postfix/main.cf' is the only Postfix configuration file that matters. From here, you can change anything about your installation.

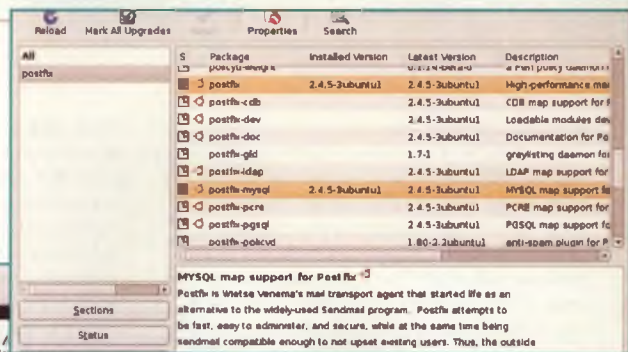


flaws in sendmail (it was designed in the early 1980s), most distributions — including Ubuntu — now use Postfix as their MTA of choice.

Books are written on Postfix installation; it's a complicated beast. Fortunately, thanks to helpful defaults generated by Ubuntu, you can create a perfectly workable system without getting into too much detail, and the first step is installation. From a standard Ubuntu installation, open the Synaptic package manager (from the System > Administration menu) and search for Postfix. You need to select this, as well as the 'postfix-mysql' package listed in the result list. You also need to search and select a couple more packages — one called 'libsasl2-2' and the other called 'sasl2-bin'. When ready, click on 'Apply' to install the selected packages. Open a terminal prompt and type the following to start the configuration walkthrough for Postfix:

```
sudo dpkg-reconfigure postfix
```

The first question you're asked is what kind of server type you'd like to use. Choose 'Internet site', as this will use your machine for sending and receiving email. You then need to enter the hostname that will point to your server. After this, you're asked for a default user account for



Postfix packages can be installed from Synaptic. The small Ubuntu logo to the left of the package name means it's officially supported.

administration emails. By default, this Postfix installation will enable email accounts for any user account on your system, so you need to enter the name for the account you created for yourself here.

On the page asking for a list of domains, make sure it looks something like the following (replacing 'hostname' with your own, of course):

```
hostname.com, hostname, localhost,
localhostdomain, localhost
```

Answer 'No' to the question about synchronous updates and keep the local network address as 127.0.0.0/8. Choose a limit for your mailboxes (or keep it as '0' for unlimited) and keep the default answer to the local address extension (+) and internet protocols to use (all). The Postfix configuration file will now be automatically

HANDY TIP

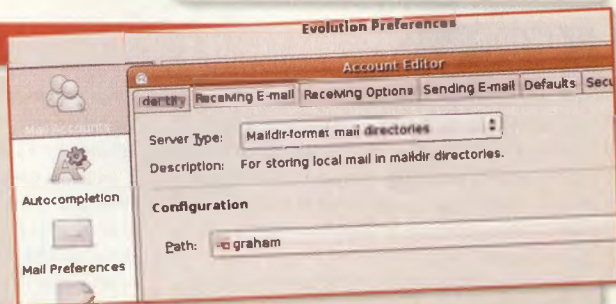
Postfix is a Mail Transfer Agent, but if you want to access your email on the server from a different machine, you'll need to install a Mail Delivery Agent. These are commonly provided by installing either a POP3 or an IMAP server on your machine and then using a remote client to connect to the delivery agent service. The easiest application to configure and set up in Ubuntu is called Dovecot. It provides both POP3 and IMAP, and can be installed from the Synaptic package manager.

DO THIS...

CONFIGURE YOUR EMAIL CLIENT

It's all very well running your own email server, but how do you use it? Launching Ubuntu's default email client, Evolution, walks you through a configuration wizard, and it's here you can enter the parameters for your server. If you use a different client, the settings will be the same; you'll just need to enter them elsewhere. To receive email, make sure the server type is set to 'Maildir' and manually choose the 'Maildir' directory we specified in the Postfix configuration file. This is where Postfix will leave any mail it receives. To send mail, the server type needs to be SMTP with the server address being 'localhost' to specify the local machine. You'll also need to enable a secure connection using TLS.

This is the same whether you're using your ISP's SMTP server or the one we configured. You could also enter the IP address of your ISP's server directly, side-stepping the SMTP configuration in Postfix. When everything is configured, any Postfix-delivered email will appear in your inbox automatically. For the account where administration emails are sent, you'll also see a group of other emails. Now that your server knows the administrator's email address, it likes to send you update emails about the state of your system. This is normal and is a



Evolution is the Gnome's default email client, but it's more like a personal information manager.

result of the Postfix installation asking for an administrator's email address.



generated and stored as `/etc/postfix/main.cf`. Now a couple more changes to this config file are needed. Open it in the nano text editor (`'sudo nano /etc/postfix/main.cf'` from the command line), and find the line that starts `'home_mailbox'`. Change this to `'home_mailbox = Maildir/'`. This is a common format for mail on Unix systems as it's similar to IMAP. If you're going to use your ISP's SMTP server for sending mail, then add your ISP's server address to the line starting `'relayhost'`. Save your changes by pressing `Ctrl+x` and choosing `'Y'`.

STEP 3: SECURITY

The next step is to ensure only authenticated servers can talk to one another and that the mail is secure between your server and any connecting server. This is a totally necessary precaution in the constant fight to thwart spammers in the hope that they don't go to the same trouble. We're going to use SMTP-AUTH for the authentication and TLS encryption to take care of the transfer coding. To get SMTPAUTH working with Postfix, open the `'main.cf'` config file again and add or modify the following lines to look the same as these:

```
inet_interfaces = all smtpd_sasl_local_domain =
smtpd_sasl_auth_enable = yes smtpd_sasl_
security_options = noanonymous broken_sasl_
auth_clients = yes smtpd_recipient_restrictions
= permit_sasl_authenticated,permit_
mynetworks,reject_unauth_destination
```

Then open `'/etc/postfix/sasl/smtpd.conf'`, and add `'pwcheck_method: saslauthd'` and `'mech_list: plain login'` on two separate lines to force Postfix to use the authentication process. We're now going to generate a signed certificate that TLS can use by generating two keys with the following three lines:

```
openssl genrsa -des3 -rand /etc/hosts -out
smtpd.key 1024
openssl req -new -key smtpd.key -out smtpd.csr
openssl x509 -req -days 3650 -in smtpd.csr -
signkey smtpd.key -out smtpd.crt
```

You're asked several questions during the key-generation process. Enter passwords when prompted, and with the second command the more details you can provide the better. For testing, you can leave these details blank. The three lines below remove OpenSSL encryption on the file Postfix is going to use, rename this `'smtpd.key'` (overwriting the original), and set the file permissions to allow only the owner to read and write to the file (using `chmod`):

```
openssl rsa -in smtpd.key -out smtpd.key.
unencrypted
mv -f smtpd.key.unencrypted smtpd.key
chmod 600 smtpd.key
```

Finally, type the following to generate the final part of the certificate — remember to enter a pass phrase and any further details you want:

```
openssl req -new -x509 -extensions v3_ca -
keyout cakey.pem -out cacert.pem -days 3650
```

All that's left now is to move those files we just generated into a location Postfix can get to. Move `'smtpd.key'` and `'cakey.pem'` to `'/etc/ssl/private/'` followed by `'smtpd.crt'` and `'cacert.pem'` to `'/etc/ssl/certs/'`. To make sure Postfix knows the whereabouts of all these files, open `'/etc/postfix/main.cf'` again and add the following lines:

```
smtpd_tls_auth_only = no
smtp_use_tls = yes
smtpd_use_tls = yes
smtpd_tls_note_starttls_offer = yes
smtpd_tls_key_file = /etc/ssl/private/smtpd.key
smtpd_tls_cert_file = /etc/ssl/certs/smtpd.crt
smtpd_tls_CAfile = /etc/ssl/certs/cacert.pem
smtpd_tls_loglevel = 1
smtpd_tls_received_header = yes
smtpd_tls_session_cache_timeout = 3600s
```

HANDY TIP

When your PC has ports and services exposed to the internet, it's essential that all packages are kept up to date. Ubuntu features its own security releases and an update manager that tells you what needs to be installed when you log in. But you can also update packages automatically. Run the `'Software Sources'` utility from the `'Administration'` menu and click on the `'Updates'` tab. From there, select `'Install security updates without confirmation'` and choose a time for the update from the drop-down menu.

```
tls_random_source = dev:/dev/urandom
```

The final step in this process is to enable SASL authentication. This is accomplished by typing `'sudo nano /etc/default/saslauthd'`, opening the configuration file in the nano text editor and adding the following lines:

```
START=yes
PWDIR="/var/spool/postfix/var/run/saslauthd"
PARAMS="-m ${PWDIR}"
PIDFILE="${PWDIR}/saslauthd.pid"
```

Everything is ready to go, all we need to do is force the Ubuntu package manager to change the username used for SASL and restart both the `'saslauthd'` and `'postfix'` servers:

```
dpkg-statoverride --force --update --add root
sasl 755 /var/spool/postfix/var/run/saslauthd
sudo /etc/init.d/saslauthd restart
sudo /etc/init.d/postfix restart
```

Congratulations! You're now running your own email server. Emails sent to your domain will be collected automatically and placed in the user's corresponding Maildir folder in their home directory. They can then use their favourite email client to read and send emails, just as they would with an external email server. **END**

DO THIS...

POSTFIX TROUBLESHOOTING

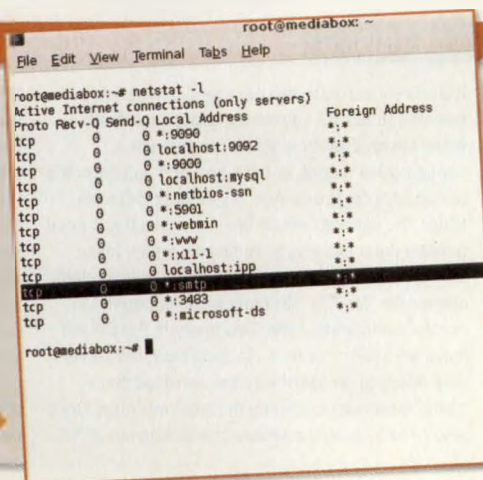
If you're having problems with the Postfix installation, there are several things you can try. The first is to make sure it's running and connected to the correct port. From the command line type `'sudo netstat -l'`. This lists the services running on your system and the ports they're attached to. Look out for `'*.smtp'` in the first set of output lines. If it has a state of `'LISTEN'`, then everything is working as it should be.

You then need to see if you can access the port from the internet. You can do this from a Linux or Windows machine using `'telnet'`. From the command line or DOS prompt, type `'telnet hostname 25'` (replacing `'hostname'` with your

server's address). If telnet can get through, the output you see will include the hostname followed by `'ESMTP Postfix (Ubuntu)'`.

If telnet doesn't get through, then there's either a problem with your firewall or your ISP is blocking port 25. If this is the case, you should still be able to send mail locally, either to other mail servers on your LAN or from one user to another on the same machine. Just use `localhost` as the domain name and see if Postfix can deliver the email.

If you have problems, you'll need some command line magic to get to the root of them.



Send SMS text messages from your web site, part 2

APC readers *Brent Knigge*, *Damien McGuire* and *Adam Dukes* show you how to enable your web site to send SMS messages with PHP.

ABOUT THE AUTHORS

- Brent Knigge is a Senior Analyst Programmer and lecturer at the Australian Catholic University. Damien and Adam are students of his from the COMP306 computing class where they learnt PHP and MySQL programming. Brent is currently based at the Strathfield campus in Sydney, and can be contacted at brent.knigge@acu.edu.au.



From left: Brent, Damien, Adam.

REQUIREMENTS

- **Web hosting**
Unless you've installed a web server with PHP, you'll want to have some form of web hosting with the ability to run PHP scripts.
- **HTML and PHP knowledge**
Some understanding of HTML and PHP would be beneficial.
- **An account with an SMS gateway provider**
An SMS gateway provider makes available for you a series of APIs that allow your scripts to communicate with their SMS server.
- **A mobile phone**
A mobile phone is required if you want to see the scripts in action. We also assume that you know what an SMS text message is.

PROCESSING THE SUBMITTED FORM

Now that we can authenticate ourselves after last month's tutorial, and we know the API command to send a text message, we need to tie that in with the processing of the web form. To start we'll need to modify our original script and check to see if the web form was submitted. If the form has been submitted, there are a few things we want to do.

- Check that the recipient mobile number is at least 10 digits long and only contains digits.
- Truncate the message to 160 characters.

```
//-- Check if the form has been submitted.
if(isset($_POST['Submitted']))
{
    //-- Initialising the page_error array.
    $Page_Errors = array();
}
```

```
//-- Validate the phone number
if(!empty($_POST['Phone_Number']) &&
(strlen($_POST['Phone_Number']) >= 10) &&
(is_numeric($_POST['Phone_Number'])))
{
    $To = $_POST['Phone_Number'];
}
else
{
    $Page_Errors[] = 'format of phone number
invalid';
}
```

```
//-- Validate the message
if(!empty($_POST['Message']))
{
    $Message = substr($_POST['Message'], 0,
160);
    $Message = urlencode(stripslashes(trim($Mes
sage)));
}
```

```
else
{
    $Page_Errors[] = 'You need to enter a
message.';
}
```

```
//-- If all validation passed
if(empty($Page_Errors))
{
    //-- Insert Point 1 this is where we put our
    //-- authentication code and retrieve the
    session id.
    //-- Once that is done we will send the text
    message.
}
else
{
    //-- display the error array
    echo '<h2>Please Try Again</h2>
<p>The following error(s) occurred:</p>';
}
```

```
//-- display each error message
foreach($Page_Errors as $msg)
{
    echo "&#160; $msg <br />";
}
} //-- End of Page_Errors conditional
} //-- End of the main Submit conditional
```

HANDY TIP

The PHP file function reads an entire file into an array where each element of the array represents one line of the file. It is also important to note that each element in the array will also contain the line ending! These spurious line ending characters will invalidate the extracted data, however we can safely remove them (and the leading space) by using the trim function.



We're not going to go through the banalities of explaining what each line of this validation routine does. It is aptly commented, and does check that the mobile number contains only digits and contains at least 10 digits (you can send text messages overseas by prepending the country code). It also checks to make sure you entered a message and, if so, truncates it to a maximum length of 160 characters.

If the validation routine is passed, we move onto executing the code at 'Insert Point 1'. This is the code that interacts with the Clickatell gateway and is discussed at length over the next two sections of this article. Of course, if the validation routine was not passed, the text message is not sent and we'll just display the errors on the browser window for the user to see.

SENDING THE AUTHENTICATION CODE

This step in the process covers the unfinished code at point 1 in the previous code sample. In this step we are going to use the PHP file function. This function reads an entire file into an array (one line per array element). The filename that we pass to the function can also be a URL, and an example using the authentication command is shown below.

```
//-- authenticate ourselves and get the session id
$Auth_url = "http://api.clickatell.com/http/auth?user=xxx&password=xxx&api_id=xxx";
$Authentication_Result = file($Auth_url);
```

We think the easiest explanation for this code is that instead of typing the URL into the address bar of a web browser you are informing the file function to open that URL and store the results of that URL call into the \$Authentication_Result variable. The \$Authentication_Result will contain the results of the authentication call. If successful it will be in the form of OK: Session Id. If unsuccessful it will be in the form of ERR: Error Number. If we are successful we want to extract the session id into a separate variable. The best way to do that is with the PHP explode function. The explode function will split your data up into an array based on the delimiter that you specified. Both the success and error messages have a common delimiter, the colon. Thus we could explode the authentication result as:

```
$Authentication_Line = explode(':',
$Authentication_Result[0]);
```

Our validation routine quickly picks up and reports back on the invalid mobile number!



Let's see what happens when we enter an invalid mobile number.



THE EXPLODE FUNCTION WILL SPLIT YOUR DATA UP INTO AN ARRAY BASED ON THE DELIMITER THAT YOU SPECIFIED

The first element of \$Authentication_Line will contain either OK or ERR, and the second element will contain the session id or error number respectively. Armed with this, we can proceed to check if the authentication was a success and, if it was, extract the session id.

```
if ($Authentication_Line[0] == 'OK')
{
    $Session_Id = trim($Authentication_Line[1]);
}
```

All of the code demonstrated in this section can now be inserted at Insert Point 1 in the previous unfinished code. The ... (in the code sample above) is the point where we need to place the code that sends the text message to the mobile phone.

SENDING THE TEXT MESSAGE

Immediately after retrieving the session id we are

ready to send the text message. Once again we are going to use the file function, and all the code snippets in this section follow on from where we left off on the previous code sample (at the ...). To start, let's look at sending the message.

```
$Send_URL = "http://api.clickatell.com/http/sendmsg?session_id=$Session_Id&to=$To&text=$Message";
$Send_Result = file($Send_URL);
```

The first thing you will probably notice are the similarities between this code and the authentication code. The second thing you will notice is that we don't have any more 'xxx' placeholders in our code.

They've been replaced by variables! The \$Session_Id variable was established as part of the authentication process in the previous section. The \$To and \$Message variables were set when we processed the form in the section before that. Even

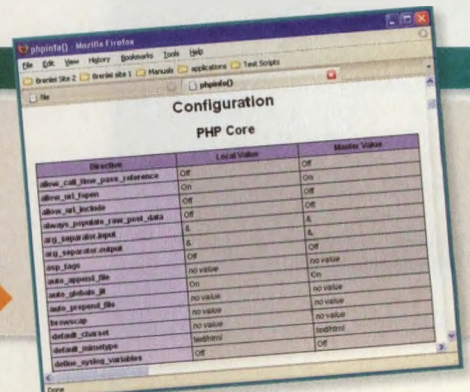
SPOTLIGHT ON...

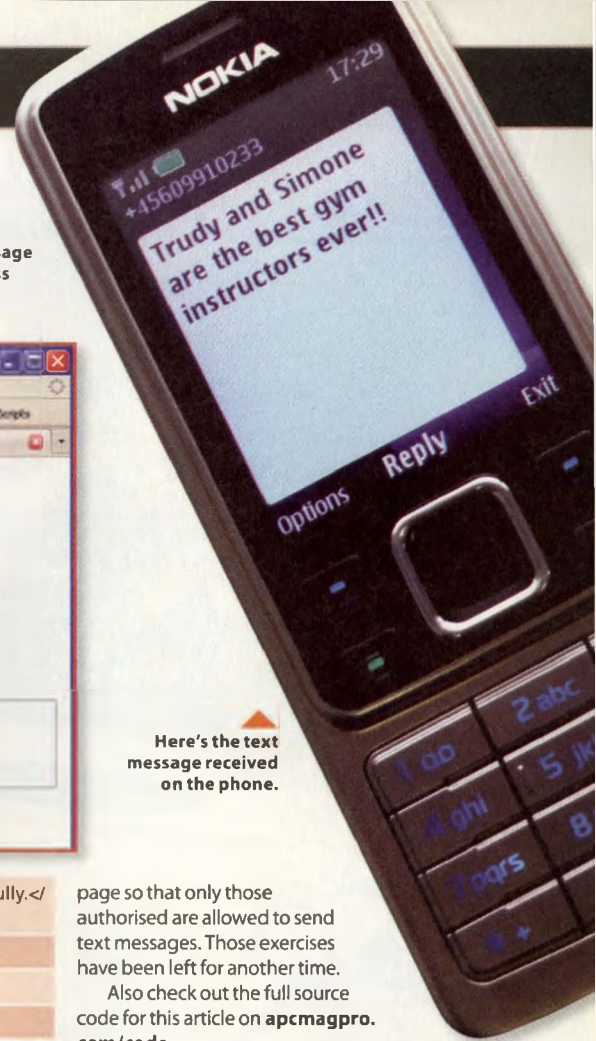
ALLOW_URL_FOPEN

The PHP configuration setting of allow_url_fopen needs to be On for the sample code to work. You can check the setting of this directive by examining the php.ini file or running the phpinfo() function. The default install of PHP has this directive On. This directive can only be changed in the php.ini file. If you have web-hosting and this directive is turned Off, you can switch the directive On by

placing the relevant command in your own php.ini file in the directory that the script is running from. This technique only works if PHP is running as a CGI module (which you can also determine by running the phpinfo() function).

Note: allow_url_fopen is the second directive on l1st.





Here's the text message received on the phone.



This time we'll enter the mobile number correctly, but we won't show you all the number (in case that mobile number starts receiving unexpected messages from readers).

Our validation routine, Clickatell authentication and sending the message were a success! We can see the success message displayed at the top.



though the above code is all that is required to finally send the text message, it might be nice if we could report back to the user if the message was sent successfully.

It just so happens that the `$Send_Result` variable will contain the status of our call. If successful it will be in the form of ID: Message Id. If unsuccessful it will be in the form of ERR: Error Number.

We'd like to display an appropriate message dependent on the status. This is easy enough to do, and we just follow the same format as we did for the authentication call in the previous section.

```
$Sent_Line = explode(':', $Send_Result[0]);
if($Sent_Line[0] == "ID")
{
```

```
    echo '<p>Your message was sent successfully.</p>';
}
else
{
    echo '<p>Could not send message. Error Code ' . $Sent_Line[1]. '</p>';
}
```

Well that's all the code necessary to build a web site that can send a text message to a mobile phone. We will stress that what we've demonstrated here today are the basic building blocks, and that has certainly been our goal. In a production web site we would most definitely translate the error code into a reasonable error message (from the code snippet above), check to make sure we have enough credits to send a text message and probably provide a login

page so that only those authorised are allowed to send text messages. Those exercises have been left for another time.

Also check out the full source code for this article on apcmagpro.com/code.

CONCLUSION

Our journey with PHP and text messaging has been fun, challenging, and, for the most part, rewarding. We hope that we have imparted enough knowledge of this amazing technology that you are able to forge ahead with your own projects sending text messages, be it from a web site or some other automated system.

We've only covered a fraction of what Clickatell has to offer in this article, and we encourage you to visit their web site and check out the feature list. <http://www.clickatell.com>

HANDY TIP - COMMAND PARAMETERS

Sendmsg - There are 21 parameters that can be appended to the `sendmsg` command. Here's a list of some of the more useful parameters and an example of the command syntax.

```
http://api.clickatell.com/http/
sendmsg?session_id=xxxx&to=xxxx
&text=xxxx&from=Lecturer&deliv_
time=30&concat=3
```

from - Can be either a mobile number or characters up to a maximum length of 11 characters. Until recently we could specify any sequence of numbers or characters and it would display on the recipient's phone. Clickatell has now taken measures to prevent mobile phone spoofing, and all mobile

numbers (and text characters) that you will be purportedly sending from will have to be registered with Clickatell.

callback - A URL where message status, charge, timestamp, message ids and acknowledgements are sent to. The status information sent to the callback can be for an intermediate or final status (or both) and can be used to report success, failure or both.

deliv_time - Delay the sending of the message by the number of minutes specified. This is very handy when you have a message you want to send but you don't want to send it straight away. Very handy for setting up Christmas wishes in advance or sending

yourself an emergency text message during that protracted meeting.

concat - If we want to send more than 160 characters in a text message then we need to concatenate them. With this parameter we can tell Clickatell how many messages can be concatenated to form one message.

cliMsgId - The client message id. This is a user-defined parameter where you would supply a unique identifier for that message. This unique identifier will be used by Clickatell when they pass info to your callback URL. (There isn't much point in receiving the status or delivery acknowledgement if you don't know which message it belongs to).



downtime

HIGH-PERFORMANCE PLAYTIME

GAMES

CHIP CHAT



Fisher Price Digital Arts and Crafts Studio

The next generation of computer users is already on the way. The Fisher Price Arts and Crafts Studio is a cool new way to help get kids computer-literate whilst educating them at the same time.

The kids use a stylus pen to learn how icons and PC navigation works while completing over 40 colouring pages, 200 stampers and 75 'scene starters', as well as using a variety of craft projects to design their own picture frames, greeting cards, invitations, calendars and more. It looks like colouring in with crayons and paper has gone the way of the dodo!

CONTACT Fisher Price
ONLINE www.fisherprice.com/au
PRICE \$99.99

VERDICT ★★★★★

STM Gelaskins

STM has just launched a new range of Silicon covers for laptops, iPods, other MP3 players and even mobile phones! Available in 13, 15 and 17in notebook sizes, these stylishly designed Silicon sleeves are designed to keep all your tech clean and scratch-free. With the work of over 60 artists to choose from, including many of the famous masters, you will be spoilt for choice as you try to decide on which skin suits your personality best. Art and technology has truly come together as users set out to personalise their gadgets. STM also offers personalised skins by order.

CONTACT STM
ONLINE www.gelaskins.com
PRICE \$29.95 for 17in notebook

VERDICT ★★★★★

Cloverfield Blu-ray disc

This has got to be one of the best films we have seen in years. The mixture of *Blair Witch*-style photography and state-of-the-art special effects makes *Cloverfield* one of the most realistic and nerve-wracking film experiences ever made.

The old *Godzilla* scenario gets turned on its head as we follow a group of twenty-somethings through a demolished New York landscape. Good acting, great camerawork and the sense of realism make *Cloverfield* a must-see experience. The only negative is, at 80 minutes long, it's too short!

CONTACT Paramount Pictures
ONLINE paramountpictures.com.au
PRICE \$42.83, Blu-ray

VERDICT ★★★★★

Sweeney Todd Blu-ray disc

Set in 18th-century London, *Sweeney Todd* is based on the true story of a barber who became infamous for dispatching his customers with a straight razor. His means of disposing of the bodies via a pie shop adds a sick twist to this already disturbing tale.

Sweeney Todd is a sombre film about lost love, crime, punishment and revenge. There are no heroes amongst the unlikeable, insane characters who populate the film. You end up pitying and hating them all equally, especially Alan Rickman who has to go down as the most evil judge in history.

CONTACT Warner Brothers
ONLINE www.warnerbros.com
PRICE \$42.83, Blu-ray

VERDICT ★★★★★



DECA 'Crystal' digital photo frame

Digital frames have been around for a few years now, but they're still usually pretty utilitarian in feel and appearance (and don't always deliver a particularly handsome way in which to present your snaps). So, it's nice to see a little style here in 'Crystal', which is part of DECA's lifestyle tech range from renowned designer Marcel Wanders. In addition to displaying photos it can play MP3s and MP4s via USB or memory card. Still, the narrow-angle display panel and clunky user interface don't quite live up to the polish of the designer housing, and, at \$599, style don't come cheap.

CONTACT DECA
ONLINE <http://snipurl.com/2b69n>
PRICE \$599

VERDICT ★★★★★

Gizmobbies

Everybody seems to be going iPod mad! Gizmobies have been designed so iPod owners can customise and protect their iPod without bulky sleeves or cases.

Essentially, Gizmobies are simply thick, padded stickers which adhere to the front and back of your iPod — but they're designed for personal customisation purposes as much as for protection.

With over 250 different Gizmobies designs, and frequent new releases, you can change the look of your iPod to suit your personality. Gizmobies are available to fit all current and past iPods.

CONTACT Gizmobies
ONLINE www.gizmobbies.com
PRICE \$20

VERDICT ★★★★★

Lowepro Tasca Sleeves

Sick of having to find a sleeve or pouch for every one of your digital products? Lowepro has come up with an all-purpose pouch that will carry any average-sized personal device. The Tasca series of sleeves are designed with a magnetic top closure for keeping devices secure, with a carabiner that enables attachment to anything you can think of. The soft, stretchable neoprene fabric creates a barrier of protection while maintaining a slim design. The Tasca is a pretty handy thing to have: their uses aren't just limited to tech equipment, and they're available in a range of colours.

CONTACT Lowepro
ONLINE www.lowepro.com
PRICE \$19

VERDICT ★★★★★

Lightning Reaction Xtreme

Now this is the ideal party starter. Just grab a few mates, get them to grab a handle each and watch the hilarity ensue. It's a simple device that is basically a reflex-testing machine. A light in the centre of the game flashes in time with an eerie, tension-building tune. When the music stops, the last person to press their trigger gets an electric shock.

This thing had us all giggling like schoolgirls when we gave it a go in the office. With two game modes (last person gets shocked, or all but the first person get shocked) this is one toy for the hardcore geeks and sadists in us all.

CONTACT Artique Designs
ONLINE www.artique.com.au
PRICE \$39.95

VERDICT ★★★★★



Tom Clancy's Rainbow Six Vegas 2

Troy Coleman samples Vegas' latest tourist attraction: counter-terrorism.

No stranger to the land of gaming, Tom Clancy has plastered his name across more titles than we have fingers and toes, with his tactical combat shooters remaining an ever present stalwart of opposition to the run-and-gun slaughterfests that flood the market.

Touted as a prequel, Rainbow Six Vegas 2 (R6V2) spans the time period before, parallel and after the first iteration. Unfortunately, storytelling in V2 is riddled with holes and as barren as the Nevada Desert. The basic, and strongest, idea that comes across is that there are terrorists who have some seriously dangerous weapons and they seem to be really, really upset.

Unlike Vegas 1, players customise a look and assume the role of a generic Rainbow operative named Bishop before entering first-person mode and beginning the campaign. Progress through levels is made by methodically dispatching hostile forces with an arsenal of high-tech weaponry and gadgets. Multiple entry points to any given environment are present and doors, windows and skylights are all valid access points. More often than not it's more efficient, and simpler, to order your team to breach and clear a room, but

sometimes the appeal of rappelling off the rooftop and smashing in through a window is just so hard to resist.

This is really the only freedom afforded the player as R6V2 does little else to mask a very linear formula. That aside, chasing down hostiles through the backyards of Vegas' residents, deafened by the sound of a helicopter flying low overhead, dogs barking and suppressed gunfire makes for some heart-hammering gaming. Enemies appear intelligent and make full use of cover while staying quite mobile and at times may attempt flanking manoeuvres. Considering the technical nature of gameplay, the controls are intuitive and tight. Within a short period of time laying down suppressive fire and throwing

a smoke grenade to move freely from cover to cover becomes second nature.

Ranking up a character has had a change; previously only online play saw experience point gains which in turn unlocked new weaponry and equipment. In Vegas 2, offline also lets players reap the rewards while still honing skills.

Future Tom Clancy gaming will be interesting with Ubisoft acquiring the right to use the name for all future gaming and related releases. Anyone want to play a little Tom Clancy's Kart Racing?



"And this is for linear gameplay!
And this is for the plot!"

AVAILABLE PLATFORMS

PC-DVD Wii PS3
PSP XBOX 360 NINTENDO DS

CONTACT Ubisoft
ONLINE rainbowsixgame.us.ubi.com
PRICE \$99.95

✓ Immersive, engaging combat; decent AI.
✗ Can tend to become samey; vague plot.

VERDICT ★★★★★

Mario Kart Wii

Peter Dockrill likes Mario Kart; doesn't like blue shells.

Well, close to a year and a half after the launch of the Wii, Nintendo's latest console finally receives its own version of the famed Mario Kart racing series — and fans won't be disappointed. The most obvious development comes in the form of the Wii Wheel — this controller accessory (which the Wii Remote snugly snaps into) assists you to literally steer your way around the track with your hands in mid-air. Conventional control-stick methods are also supported, but we don't think you'll want them:

in-air steering is too much fun (and addictive). The sixth MK title also ups the number of racers from eight to twelve and for the first time introduces bikes into the mix. Online play is a cinch to set up and greatly expands the value of the game for solo players (although this is a great party game). There are 32 tracks to master (16 new, 16 'retro'), heaps of content to unlock, time trials, the ever-popular battle mode and more. Still, after sixteen years, it is all starting to feel a little bit old hat. But as long as

Nintendo can continue to innovate as successfully as they have here with the steering revelation, the Mario Kart juggernaut shows no signs of slowing.

AVAILABLE PLATFORMS

PC-DVD Wii PS3
PSP XBOX 360 NINTENDO DS

CONTACT Nintendo
ONLINE www.nintendo.com.au
PRICE \$99.95 (includes Wii Wheel)

✓ Wheel-steering exhilarating; online multiplayer.
✗ Series still lots of fun, but starting to feel a bit old.

VERDICT ★★★★★

Make like Mario with the Wii Wheel for a more real racing experience.



Army of Two

Troy Coleman goes back-to-back with another man.

Nestled somewhere between a straight third-person shooter and a tactical warfare title, *Army of Two* hypothesises a future where the military have become too expensive so the private sector is stepping in to get things done. Gameplay focuses primarily on co-op fighting/problem solving to achieve objectives for cash. Commands are issued to your partner, which are sometimes carried out, oft times not. Co-op play with a friend is far better for efficiency but lets itself down as

the entire command mechanic is rendered useless and coordination relies solely on voice chat. A few neat tricks have been thrown into the well trodden tracks of shooters, and enemy intelligence is quite good. Firing weapons and making a whole lot of noise draws loads of attention (aggro), inviting one player to sneak around virtually unseen and eliminate targets from behind. Mid-mission shopping lets the modern mercenary upgrade armour, purchase and pimp weapons. Online multiplayer is also

supported but is currently in a region-locked state.

AVAILABLE PLATFORMS

PC-DVD Wii PS3
PSP XBOX 360 NINTENDO DS

CONTACT Electronic Arts

ONLINE <http://www.ea.com/armyoftwo>

PRICE \$89.95

✓ Aggro control; pimped weapons.

✗ Partner AI can be troublesome.

VERDICT ★★★★★



"Mitch, we don't talk anymore. I want to talk about us..."

Professor Layton and the Curious Village

Peter Dockrill's brain is well and truly teased.

Recent times have not been overly kind to the adventure game, that humble but dependable workhorse of old-school PC gaming. Ever since its '80s heyday, things have been a little lean. Advances in 3D graphics have propelled other genres, but the more slow-moving, story-laden, puzzle-solving quest of yesteryear has been largely forgotten. Luckily, portable consoles (plus the way we play them) now provide fertile territory for this venerated medium, which brings us to this absolute gem from Nintendo. Styled graphically and in tone

much like an episode of *Tintin*, you're cast as the titular Professor Layton (with his trusty apprentice, Luke) and charged with investigating suspicious happenings in the curious village of St. Mystere. While the plot itself is really quite linear, what'll really stump you are the logic puzzles — continually thrust upon you by the town's inhabitants — through which your progress is marked in the game. These provide a very enjoyable, old-fashioned challenge which sits nicely with the story, making for an overall experience that (whilst perhaps a

little easy) feels like a very welcome blast from the adventuring past. Highly recommended.

AVAILABLE PLATFORMS

PC-DVD Wii PS3
PSP XBOX 360 NINTENDO DS

CONTACT Nintendo

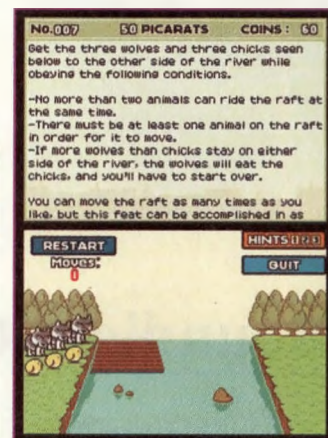
ONLINE www.nintendo.com.au

PRICE \$69.95

✓ Excellent overall tone, style and feel.

✗ Will seem a bit simple to seasoned adventurers.

VERDICT ★★★★★



Sam and Max: Series 2

Richard Cobbett fields another phone call from the Commissioner.

For the uninitiated, Sam is a gun-toting canine private detective. His partner Max is a psychopathic, hyperkinetic rabbit and the part-time President of the United States. Together, they're the Freelance Police, almost accidentally fighting crime as they rampage around the world causing about as much carnage as the baddies. This second series, downloadable online, is a massive improvement over the first, with more variety and much tighter comedy writing. The series is

split into five episodes, each mixing scenes on Sam and Max's street with at least one major new location. But *Series 2* shares many of its predecessor's problems too. The challenges tend to be generic, with the more interesting ones often poorly explained — and the newly added hint system is only useful to clarify what you're meant to be looking at. The recurring characters and scenes can feel shoehorned, and the jokes aren't all that well set up. However, the writing is far superior to the first

season, and improves as you progress through the games.

AVAILABLE PLATFORMS

PC-DVD Wii PS3
PSP XBOX 360 NINTENDO DS

CONTACT Telltale Games

ONLINE www.telltalegames.com

PRICE US\$35

✓ Great comedy writing; bite sized chunks of good.

✗ Generic, poorly explained challenges.

VERDICT ★★★★★

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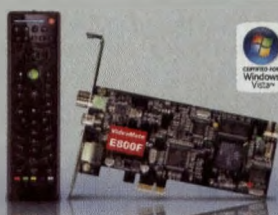
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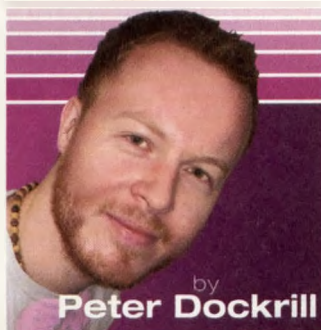


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chip chat

by
Peter Dockrill

DAMN IT, JIM!

Google Earth. Is there anything it can't do? Just when you thought the Starship Enterprise was about as unlikely as William Shatner's credibility, along comes Google Earth to prove that there was more to Gene Roddenberry than just a pointy ear fetish (see <http://snipurl.com/2a114>). Yep, it appears the ol' futurist was onto something after all. Until next month then...



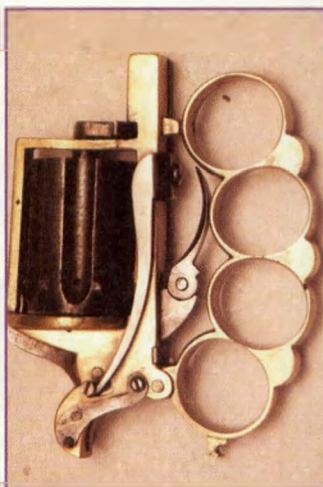
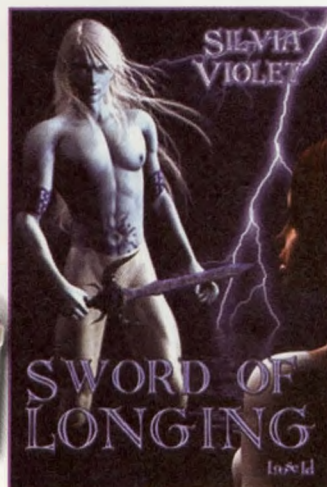
An 'enterprising' layout, as viewed from the final frontier.

Books, chicks and guns: the internet in '08

Regular readers of this column will be familiar with Chip Chat's appreciation of the internet and its unique ability to play host to the idle and idiosyncratic in us all. Whereas, once upon a time, strange people only enjoyed a limited number of conventional avenues in which to display their strangeness (eg. stamp collecting, miniature painting, curling etc.), these days, any Tom, Dick or Harry can set about devising their own personal blog and claiming ultimate authority over whichever niche and impenetrable topic they fancy. Take, for example,

'Judge a Book by its Cover' (<http://judgeabook.blogspot.com/>), a site whose sole aim is to show off "truly hideous" book covers — there are some real shockers in here and it's all pretty hilarious, so come prepared to judge. To dip the brow a little lower, maybe 'Hot Chicks with Douchebags' (www.hotchickswithdouchebags.com) is more up your alley. This little gem simply posts photos of attractive girls out with idiotic-looking macho guys and provides 'commentary' on the happy snaps to boot. Any guy who ever puzzled over why pretty girls go for musclebound

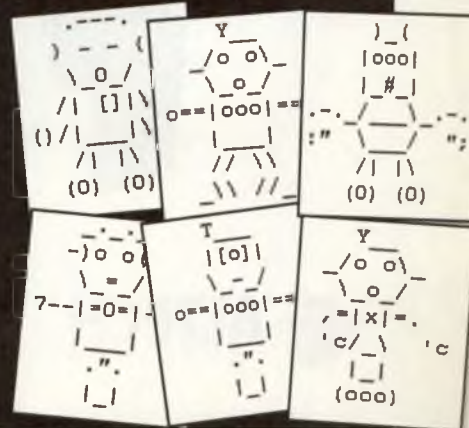
clods will find a lot to laugh at here. (Note: this one's definitely 'adult' humour — so reader discretion is advised!) Finally, fans of firearms and miniaturisation will discover that all their Christmases have come at once in 'Dark Roasted Blend' — a self-styled web compendium of 'weird and wonderful things' — and its collection of miniature spy guns (<http://snipurl.com/29qy6>). After you've checked out the micro-armoury, take a look round the rest of the site: there's some pretty wacky stuff on hand. And that's our snapshot of the web for you in this wintery July 2008.

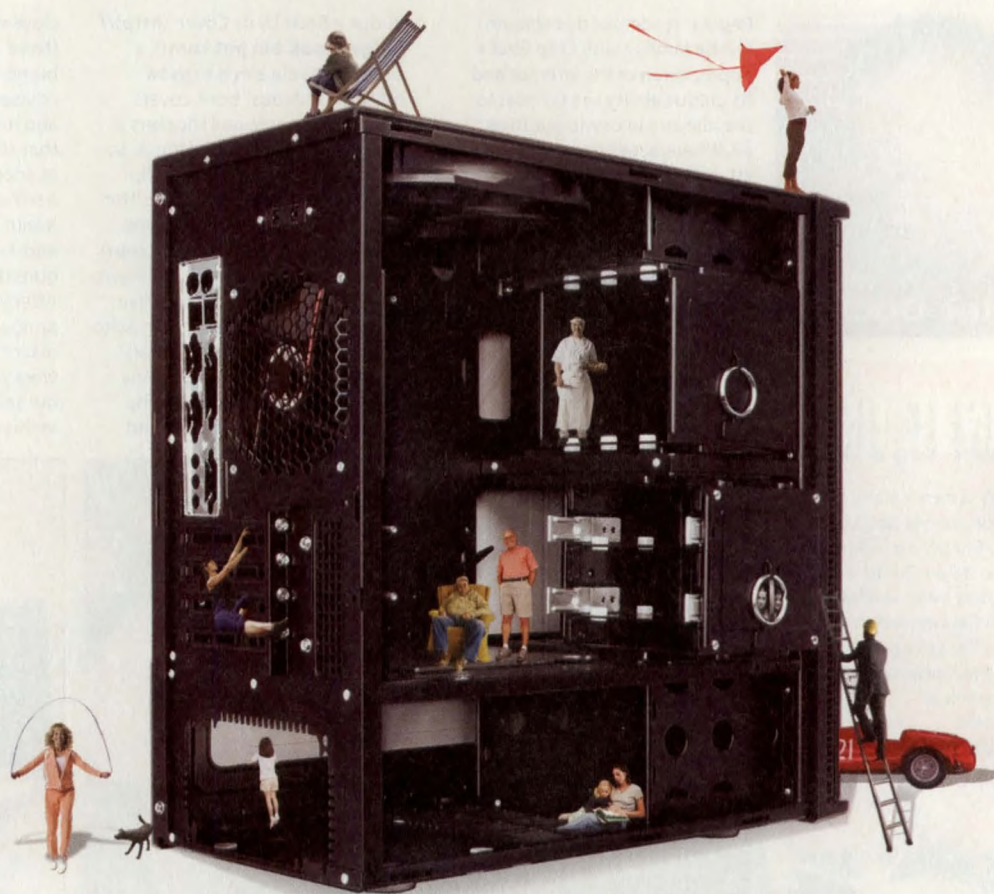


One kilobyte; a thousand robots

Robots. They're cool. And we're still waiting for them to become our household servants en masse (in the same way that the TV news always seems to be implying that Japan's current population is approx. 15% domestic droids). Anyway, we're not there yet. But — in the meantime — we can still enjoy robots. Take one of the entrants in the recent 'Boing Boing Gadgets 1K Competition' (<http://snipurl.com/29rb6>) for example. Competitors were asked to see what they could achieve with just one kilobyte of code.

The varied finalist entries all have a certain charm to them but our fave is the 'Mini Robot Factory'. Just head to <http://zomghott.com/robo/q-mrf.html> and you'll see what one kilobyte of JavaScript can do. Each time you refresh the page, a new robot is randomly constructed on the fly. If only all coding was so concise and efficient... heck, maybe we'd even have those darn robo-bartenders by now! **apc**





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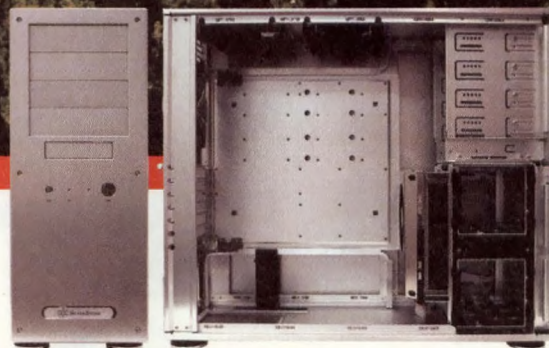
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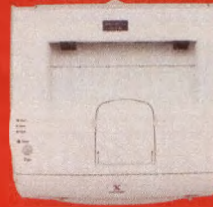
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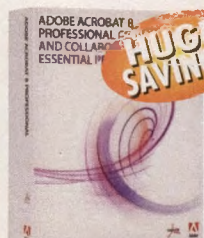
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Model	TONNY
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BC-03	\$28.00
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BC-20	\$28.00
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Model	TONNY
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T008	\$13.00
T009	\$15.00
T013	\$ 4.50
T014	\$ 7.90
T017	\$ 9.70
T018	\$10.60
T026	\$ 9.70
T027	\$12.40
T028	\$ 9.70
T029	\$10.60
T038	\$ 9.60

Model	TONNY
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T0321	\$10.80
T0322	\$ 7.50
T0323	\$ 7.50
T0324	\$ 7.50
T0422C/MY	\$ 9.50
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C6657AA (#57)	\$32.00
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LC-04C/MY	\$7.50
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12A1980	\$35.00
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	C9721/2/3A(CMY)	\$185.00
HP LJ4500, Canon LBP2460/2040	C4191A(BK)	\$ 59.00
	C4192/3/4A(CMY)	\$ 69.00
HP LJ8000	C4149A(BK)	\$ 89.00
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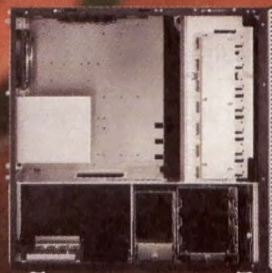
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APC Magazine
February 2008



Lian Li PC-A10 Classical Series Mid-Tower Case

PC-A10B – Black Aluminium
PC-A10 – Silver Aluminium

All of Lian-Li's best features come together in this magnificent value-for-money aluminium case

- Slidable M/B tray
- Twin PSU mounts
- 3 x 12cm fans plus 1 x patent side fan
- Soundproof lockable door
- Unique Cooling chamber for PSU(s) and HDDs

- 2 x pre-drilled holes for water cooling
- Top I/O ports
- 3-speed fan controller
- ATX and Pentium 4 M/B and standard ATX PSU compatibility
- 7 x 5.25" and 5 x anti-vibration 3.5" bays
- Measures 215 x 535 x 522mm (W x H x D)

PC-C32A
– Silver Aluminium

PC-C32B
– Black Aluminium



Lian Li PC-C32 Rack-Mountable Desktop Case

This is a one-of-a-kind case offering versatility and style in one package

- Removable handles; choose between desktop or rack-mount positioning
- 2 x 12cm fans, spare 8cm and 14cm fan mounts
- Removable PSU tray
- Anti-vibration runner rings and springs
- HDD and CD-Rom easy-assembly modules
- ATX M/B and standard ATX PSU compatibility
- 2 x 5.25" (5.25" to 3.5" converter x 1) and 4 x 3.5" drive bays
- Measures 426 x 167 x 530mm (W x H x D)



PC-A09B
– Black Aluminium



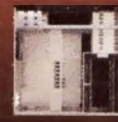
Lian Li PC-A09B Classical Series Mid-Tower Case

Classical styling with a modern flair at an affordable price

- Removable PSU tray
- 2 x 12cm fans (blue LEDs optional)
- Top I/O Ports
- HDD can be turned 180 degrees
- ATX M/B and standard ATX PSU compatibility
- 4 x 5.25" and 3 x 3.25" drive bays
- Measures 210 x 450 x 490mm (W x H x D)



PC-A70A – Silver Aluminium
PC-A70B – Black Aluminium



Lian Li PC-A70 Classical Series Full-Tower Case

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- Top I/O Ports
- HDD cages can be turned 180 degrees
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